

In the political arena: "apathetics", "gladiators" and "spectators". Geraint Parry and George Moyser discuss the nature of POLITICAL PARTICIPATION in Britain (pages 14 and 15), which F. F. Ridley describes the need for a fully participatory "political literacy" among the underprivileged (page 15).



E. V. RIEU's Penguin Classics translation of the *Odyssey* has now sold a staggering 2,760,000 copies. Betty Radice, present editor of the Classics series, looks back at its founder and inspiration (page 17)

(Just) East of Suez: by 1945 British politicians were largely reconciled to losing India, the jewel of the Empire. Their attention shifted, as William Roger Louis has described in a new study, to the informal empire of the MIDDLE EAST. David Carlton reviews *The British Empire in the Middle East* (page 18)

What is the relation of SCIENCE to TECHNOLOGY? Dependence? symbiosis? competition? Alec Campbell reviews Robert Bud's and Gerrylyn Roberts' provocatively titled account of Victorian chemistry *Science versus Practice* (page 28)

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The fourth environmental revolution
Peter Willmott on Ray Pahl
New books in mathematics and physics

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Small is not so bad

Twelve of Britain's universities, almost a quarter, have fewer than 3,500 students. Although three are constituent colleges of the University of Wales and so not full universities in their own right, these 12 are all regular universities in common-sense terms; the total does not include the business schools, Lampeter and the Welsh National School of Medicine. Apart from their size these institutions have little in common: three new, four technological, one postwar English, one ancient Scottish. Nor do they enjoy similar reputations. By no means all are "vulnerable" in the whisper-language of the university establishment; among the 12 is York which battles with Warwick for the title of the most successful of the new universities.

Yet size is a growing consideration in deciding university policy today. Being in that bottom quartile has become a *prima facie* case for vulnerability, which would have seemed nonsensical only ten years ago. By the middle 1970s most sensible people accepted that Britain's universities were not likely after all to grow as big as the spectacular campus universities of America.

The more shrewd suspected that some universities had spread the subjects they taught too thin and too far. As the hope of further massive expansion receded these universities might be left with too many departments too close for comfort to the edge of viability. But this was seen as an internal not an external problem, an issue that might need to be tackled by tougher university administration not an issue that would become a serious factor in national policy-making for the university system.

"Smallness" became an active issue in 1981 when the University Grants Committee decided to cut student intakes to match the reduced grant. The universities now had to come to terms with a prospect that not only excluded further significant expansion but required them to reduce their present number of students. In larger universities such a change could be interpreted as sensible retrenchment, a defensible determination to protect academic standards - if its effect on academic employment and student opportunity could be forgotten. In smaller universities it was a much more serious matter. Not only were hopes of making it into a higher division choked off but the viability of departments and even the integrity of institutions seemed to be at risk.

"Smallness" has become an active problem only in the last two years. The UGC's twin drives against small departments and for greater selectivity in the funding of research - the main thrust of its recent advice to Sir Keith Joseph - are both likely to hit smaller universities with greater force than

larger ones. Of course not all small departments are in small universities; some universities have been able to tolerate the proliferation of small departments precisely because they are large institutions. Nor is research excellence a monopoly of the big institutions; outside the "big brother" subjects like nuclear physics where size is clearly a crucial factor many small universities have strong reputations.

Yet the UGC's new approach is still likely to discriminate against smaller institutions. Inevitably small universities have more small departments than big universities. Moreover small departments in small universities are more likely to be in science, where the arguments against smallness are stronger, while small departments in big universities are often in the more exotic humanities, where there may be no alternative to smallness.

As for more selective research funding it is difficult to imagine that smaller universities will not be at a sustained and so cumulative disadvantage. The exodus of so many staff over the past three years often leaving a barely pulsating critical mass, the growing sophistication and expense of necessary equipment so much more difficult to justify and to use intensely in smaller units, the comparative scarcity of vacancies for new young staff - these and other factors will handicap smaller institutions in the research race.

These new policies, on the size of departments and the selectivity of research, are being developed against the confused background of a growing belief that there needs to be much more categorical differentiation between universities than has ever been the formal practice in Britain in the past. It is argued that we can no longer afford to treat all universities, rhetorically if not actually, as if they were of equal standing. Instead we should move towards an explicit two- or three-tier university system, with a dozen or so research universities on the American pattern, a middle band of institutions in which the range if not the quality of research is restricted, and a group of liberal arts colleges that concentrate on undergraduate teaching.

So by a process of accumulation smallness has become certainly an issue and maybe a problem in the universities. The difficulties of the 1970s have been overlaid in the 1980s by an apparently much more active policy of discrimination against small universities, and both disabilities are increasingly being seen in the larger context of the desirable shape of the university system in the 1990s, where what small universities find in a much more differentiated system - or, more pejoratively, what should hap-

pen to those universities which have failed to break into the, entirely undeformed but powerfully suggestive, big time?

Both questions deserve to be addressed not because they are fair but because they are being asked. The first should be answered by a bold assertion that in a more differentiated and selective system the big universities do not always deserve to be the winners and the small ones always the losers. The success of York is clear proof that small does not equal bad, while there are some universities safely above the 3,500 students level which have wobbly reputations.

The analogy with the United States has to be handled with great care. America's highly diverse system of higher education has grown up in quite different historical circumstances. The voluntary colleges which are about to come within the withering orbit of the National Advisory Board are the nearest equivalent to America's liberal arts colleges, not Keele or Stirling.

Two other points need to be emphasized in devising a considered answer to the first question. First, a university with 2,470 full-time students, the smallest of the 12, is still a large institution - far larger than the average university of the pre-Robbins era. Anyone who doubts how big universities today have become by the standards of even recent history should read the essay "Early Days at Leicester" in Philip Larkin's recent anthology *Required Writing*.

Second, the American system is remorselessly resourced. Undergraduate teaching is often of patchy quality in the most famous research universities. Do we wish to reproduce that pattern on this side of the Atlantic? The second question, although even less fair, also deserves an answer. It is not sufficient to imagine that once the winner-universities, big or small, have been safely identified and generously funded the others will go away happily and invent a new role as liberal arts colleges, a quite inappropriate category in rhetoric at least, the implicit ambition of all Britain's universities to produce Nobel Prize-winners or failing that as many fellows of the Royal Society and the British Academy as possible. All the more reason to give solid and sustained attention to the alternative role they might fulfil.

The most important question for universities in the 1990s may well be this: how can we assign new purposes that are equally honourable to universities which are equally honourable to themselves? It may be true that the ambition to be or to become world-class research universities? Some perfectly respectable answers can be found, just below the soil of the history of the British university.

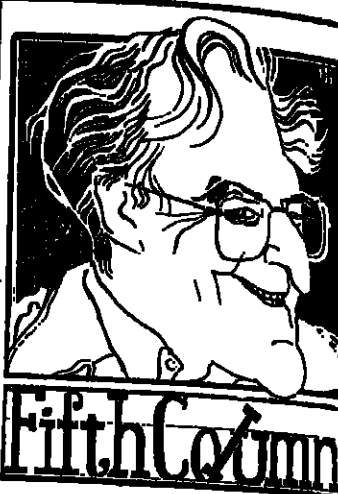
But miners are, I know, different. I remember over 20 years ago a fascinating court case in Scotland which came about because a miner who had wrapped a number of detonators round his leg while leaving the pit tripped over and blew a lot of his leg off.

He said in defence that he could not resist the temptation to pick the things up when he saw them lying around in the pit. Any fault there was in the case lay with the Coal Board for leaving the detonators as a temptation to an innocent miner, who might even be suspected of taking them away to sell for blowing safes.

The absurdity of public statements about the miners' strike is now reaching heroic proportions, but the event itself now seems increasingly dangerous. Frank Johnson wrote a funny column in *The Times* about the Yorkshire Ranter with the lethal hair spray hidden in his briefcase; and Mr Scargill can be funny himself. But he is not at all funny at the moment.

And the attitudes that can be interpreted as spin-offs from the strike are alarming. It was expected that the Labour Party conference would result in the passing of grand generalized statements about policies that we know from experience they get back into power.

But it was not expected that a conference of policemen would hear a statement that they would be unable to work for a Labour government, even if that was corrected by a later speaker. At least we can console ourselves with the knowledge that the police are looking after Mr Scargill and will protect him from harm.



I am thinking of taking my car to the garage and having the front bumper removed. There is no point in removing the back bumper because that piece of equipment, like obsolete parts of the anatomy that wither away when they are no longer any use, has already ceased to be a bumper in any meaningful sense.

Indeed on my car the rear lights are actually set into the bumper, so you can deduce that I own a Mini Metro and assume that the population as a whole has given up driving into the rear of motorcars, except possibly when parking in London.

But the front bumper is a different matter. However insubstantial, it still looks like a bumper and is therefore a provocation. It invites other motorists or motorcycles to drive straight at me and smash me up - as well as possibly themselves; and since that is clearly undesirable, the best thing is to get rid of the bumper so that innocent drivers will no longer be provoked to behave badly.

You may wonder what has put this idea into my head. It is because I was transfixed by Mr Scargill's declaration a few weeks ago that the miners, who we all know, especially in Yorkshire, are peaceful people, are provoked by the sight of riot shields held by policemen and have an irresistible urge to throw things at them. And since, as I have pointed out before, Mr Scargill is a very clever fellow there must be something in it. If the wretched policemen would just throw away their riot shields they would come to no harm. The bricks would miss them.

Now it may be that this is a psychological problem that affects miners more than any other group. As far as I can remember I have never felt an irresistible urge to hit policemen over the head because they are wearing helmets.

But miners are, I know, different. I remember over 20 years ago a fascinating court case in Scotland which came about because a miner who had wrapped a number of detonators round his leg while leaving the pit tripped over and blew a lot of his leg off.

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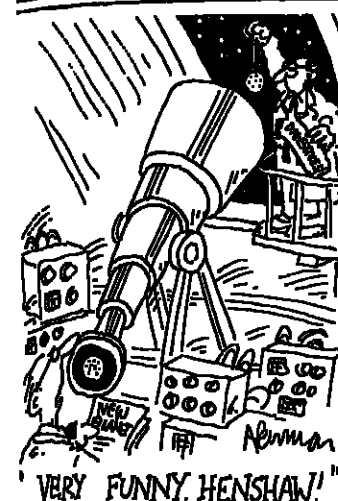
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Patrick Nuttgens

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No research safe from SERC axe

by Jon Turney
Science Correspondent

The Science and Engineering Council has decided to axe one or more major commitments to free money for new work. The research to be cut will be chosen early next year, but the council's chairman, Professor John King, has made it clear no area is safe. Last week's council meeting agreed on a complete reappraisal of all spending, on the assumption that funds for research will continue their gradual fall. The four boards will be told to start with a blank sheet of paper and justify every item in their portfolios for the "forward look" debate. This is a radical departure from current practice, which simply involves specifying desirable new ventures and making marginal adjustments to existing spending.

Professor Kingman said the council was looking for a major act of surgery to the rest of the body could be healthy. The effect of the new review will be to extend the scrutiny of British spending on particle physics, currently the subject of an inquiry chaired by Sir John Kendrew, to all the rest of the SERC's £250m annual budget.

Professor Kingman indicated that Kendrew's verdict would be a vital part of the wider review, which must be completed by next Easter. But he said even pulling out of the European particle physics laboratory (CERN) in Geneva would not balance the council's books. He cited the estimate of Sir David Phillips, chairman of the Advisory Board for the Research Councils, that level funding on present terms for 10 years would mean a 25 per cent decline in real research spending. That would leave the SERC short of £20m a year.

The council decision follows a preliminary review guided by the SERC's secretary Dr Ashley Catterall, to assess how savings could be realized if different lines of work stopped. Professor Kingman would not be drawn on the examples used, but he said it was possible to compare savings from closing down large facilities like observatories or particle accelerators with those from withdrawing big blocks of grant support to universities. The council is looking for savings over the next three to six years.

Professor Kingman said the loyalty of board chairmen would be severely tested when the final choices were made, but all had agreed the review was needed. He stressed there could be no "no-go areas" in the debate. "More money in this year's science budget round, but the new review will shift the focus of debate."

Professor Kingman felt that the council had been too optimistic in the recent past about the chance of extra money. But even ideas which drew strong support from the ABRC, like the recent initiative to boost research in astrophysics, no longer attracted

Crumbs! A star is born

A minor planet, orbiting halfway between Mars and Jupiter, has been named after Professor George McVittie, honorary professor of theoretical astronomy at Kent University, to celebrate his 80th year.

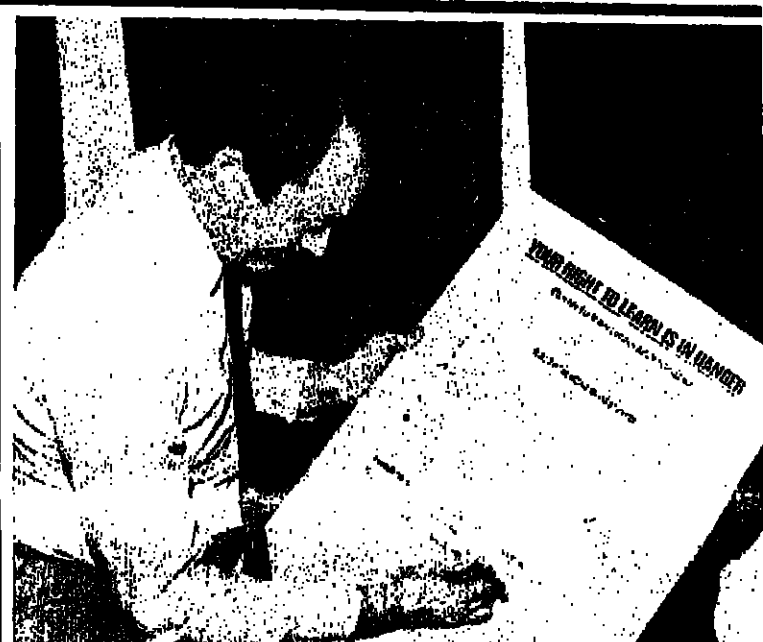
No one has been close enough to the planet McVittie to know if it is hard or soft-centre, or plain milk. But it is between six and 10 miles wide, takes nearly six years to revolve around the sun, and never comes closer to earth than 152 million miles.

It was discovered in 1964 by the director of the Goethe Link Observatory at Indiana University, in the United States, who proposed it should

be named after McVittie, then in a corresponding position at the University of Illinois Observatory. The International Astronomical Union has now approved the name.

Professor McVittie was elected to an honorary chair at Kent in 1972 and still lectures. He has been an influential figure in general relativity and cosmology for over half a century, and was awarded an OBE in 1946 for his work as a "Bletchley cryptographer" during the war, cracking enemy codes.

He was elected a Fellow of the Royal Astronomical Society in 1931. From 1961-1970 he was Secretary to the American Astronomical Society.



Mr Ken Livingstone, leader of the Greater London Council, adds his name to 10,000 others on a Charter for Adult Education. His warning on the effects of Government policy on the ILEA, delivered to an audience of 500 students and staff at the City Lit Centre for Adult Studies, Covent Garden, was given fresh urgency only five days later when the Government announced that direct elections will be held in May 1986.

HMI backs poly scientists

Her Majesty's Inspectorate has thrown its weight behind science research in polytechnics, saying it should not be reduced but in some cases increased. Undergraduate teaching in science departments is definitely better where staff are doing research, says an HMI study of science research in the polytechnics.

"Departments active in research had a livelier ambience which encouraged student participation in and out of the classroom," the report says. "The evidence from the (HMI) visits suggests that the amount of research in science in the polytechnics could not be reduced without damage to the undergraduate experience in terms of staff expertise and the enhancement of the curriculum which the research in

progress allows. "The present levels of research activity should be maintained and, in the case of some institutions, enhanced."

The Inspectorate found polytechnic research was largely applied rather than pure, and was successful in attracting funding from industry, Government departments and the research councils, and leading to "creditable numbers of publications".

The report cites polytechnic research income as high as £750,000 over two years, of departmental publication records, and of individual members of staff with their work widely quoted in publications. Details and tables, page 7. Leader, back page

Ulster urged to increase intake of students from Republic

from John Walshe

DUBLIN The number of students from the Irish Republic in Northern Ireland universities and colleges could be increased significantly over the next decade at no cost to UK taxpayers, a new study has shown.

It says this would probably be to the advantage of Ulster's institutions, which might be spared some difficult decisions during a period of contraction. They would find it easier to keep their plant intact for the predicted expansion of the later 1990s, says Professor Gareth Williams of the University of Lancaster.

The report for the Northern Ireland Economic Council and the Department of National Economic and Social Affairs, was considered at a recent

joint meeting in the Irish capital, where it was agreed to publish the report shortly.

If the report was implemented, the benefit for the republic's education authorities would be that a few hundred students could be catered for at far less cost than if provided for at home. It might even be possible to postpone indefinitely the capital expenditure on some places which would otherwise be necessary for a relatively short period.

Professor Williams, director of the Institute for Research and Development in Post-compulsory Education, was asked to review the complementarity of third-level education in both parts of Ireland and the scope for mutually beneficial cooperation. He said the commonest student age

Poll shows great public ignorance of polytechnics

by Karen Gold

Widespread misunderstanding among Members of Parliament, captains of industry and the public about polytechnics are revealed in a substantial survey by MORI.

More members of the public thought they ran O level or A level courses than knew they taught degrees, the survey into attitudes towards polytechnics and universities found. Thirty-four per cent of those interviewed (excluding "don't knows") thought polytechnics awarded degrees, while 36 per cent thought they did O levels and 44 per cent A levels. (In fact no polytechnic runs O or A level courses.)

Among MPs who debate higher education in the House of Commons today, only 20 per cent thought polytechnics provided education for the professions, despite the fact that the majority of students qualifying for the professions and business are now from the public sector.

Thirty-six per cent of all MPs and 43 per cent of Conservative MPs thought that education standards at polytechnics were not as high as they should be, and 54 per cent of all MPs thought that polytechnic facilities were not as good as university ones. But only 22 per cent said that polytechnics provided a poorer education than universities.

Sixty per cent of MPs thought polytechnics provided a worthwhile education, but only 44 per cent thought it was the sort of education needed by industry and commerce. Conservative MPs had a higher opinion of this - 48 per cent agreed polytechnics provided the education industry and commerce needed - than Opposition MPs of whom only 36 per cent agreed.

MPs divided on party lines on funding: 13 per cent of Conservatives thought there should be more Government funds for polytechnics, and 5 per cent thought there would be more polytechnics, while 61 and 25 per cent of Opposition MPs supported more funding and more polytechnics respectively.

The Market and Opinion Research International survey, commissioned by a group of polytechnic governors, comprised interviews with a representative sample of the general public (1949 interviews); managing directors of *The Times* top 500 companies (202 interviews) and 96 MPs. The first two surveys took place in April 1983, the MPs survey in June this year.

That date, coinciding with protests and court cases involving the Polytechnic of North London, may partly account for the division between

the politically conscious MPs and other groups over the two areas: educational standards, which significantly more MPs than industrialists on the profile thought were not as high as they should be, and the political views of polytechnic lecturers. Forty-five per cent of MPs thought lecturers tended to have left-wing political views, compared with 41 per cent of the industrialists and a mere 10 per cent of the general public.

MPs did have a much higher opinion of the practicality of polytechnic courses - 71 per cent of them thought the courses were practical, compared with 63 per cent of industrialists and 40 per cent of the general public. (Though much hinges on the definition of "practical".)

The captains of industry were generally much less sympathetic to the polytechnics than the general public, and even the more affluent AB social classes within the general public. More thought facilities were worse, lecturers left-wing, education was poorer than in universities, standards were below par, job opportunities were worse, that their AB counterparts elsewhere.

But more of them did think polytechnic courses were practical with part-time courses, a worthwhile education, and time spent in business

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The value of art history, 15

Professor Williams recommends that academic institutions should seek non-government funds to establish an Irish academic foundation and stimulate research, postgraduate study and cross-border academic contacts, possibly under the auspices of the Royal Irish Academy.

The report attends to the problems of the north-west, suggesting the University of Ulster should make an effort to recruit from County Donegal. Cooperative programmes in the area should have high priority in any Anglo-Irish joint study schemes.

Professor Williams says some subjects, for example biotechnology and computer science, might be best covered by single centres catering for all Ireland.

Leader, back page

Letters to the editor

A university by any other name

Sir, - I do not wish to comment on the wisdom or otherwise of the proposal that Middlesex Polytechnic redesignate itself as Middlesex University. But the legal advice that their Joint Education Committee has received is patently nonsense, and cannot pass unnoticed.

The thesis appears to be institutions cannot call themselves "universities" unless they have in some sense been officially designated as such, without being potentially guilty of a charge that they are deliberately deceiving or misleading. Yet there is in English law no connection whatsoever between the use of the title "university" and either a Royal Charter or the ability to award qualifications. Degrees or others, however worthless the latter may be, are not used by universities in their titles. Cranfield is a good example. The Council for National Academic Awards itself is another.

Second, some recognized conferrals of degrees are not empowered specifically by charter so to do. Perhaps the best, because the most extreme, example is the Archbishop of Canterbury.

Third, there is one recent instance of an institution whose academic respectability was subsequently recognized by the Government using the title "university", although a privately funded commercial enterprise, namely the University College of Buckingham.

Fourthly, there is nothing in the word university which implies that the institution so designated awards only first degree or postgraduate qualifications.

Finally, the Department of Education and Science has consistently, under Governments of both major parties, refused to legislate against "degree mills", often using the word university in their titles, on the grounds that to restrict the ability to award degrees to chartered institutions (or some other defined category) would produce intolerably complex and possibly unduly restrictive legislation.

Such institutions, operating from this country, normally seek to sell their wares overseas, normally in the developing countries. The payment of a fee, sometimes plus a period of registration or the submission of a short piece of written work, secures the award of a degree, even of a PhD. Without comment on the reputation of their requirements, I can instance from recent years Coventry University (not to be confused with Warwick University or Coventry Polytechnic), and Brighton University (which is neither Sussex University nor Brighton Polytechnic).

I have repeatedly urged upon ministers in the DES the need to legislate. Those who have sympathized (Bill von Strauss, Reg Prentice and Gerry Fowler) have never been left there long enough to get the department to draft watertight legislation, or to find a place for such a Bill in the legislative programme. They would, I am sure, testify to that effect. Three Private Members' Bills have failed.

Whatever else is clear, it is certain that the solicitor who advised the



The Archbishop of Canterbury: not empowered to confer degrees

Middlesex Polytechnic is in direct conflict with the views of successive DES legal advisers, and presumably those of local police solicitors as given of the Director of Public Prosecution, since no prosecution of a "degree mill" has ever been instituted.

What is in a name, except status? Middlesex, except understandable error? And what a mess.

Yours faithfully,
LYNDON H. JONES,
Principal,
South West London College.

Keep art as a hobby

Sir, - I read with dismay your report of the statements made at the recent National Society for Education in Art and Design conference (THES, October 12).

No one in their right mind would suppose that the demand for artists and designers exceeds the supply from art schools. A reading of the trade press over the past few years reveals a woeful tale of unemployment among qualified designers. It is true that some art schools and polys have excellent records of employment for their graduates, but many do not and most simply do not know what happens to their students after graduation. As to that "well-established career structure in art and design" - what or where is it? Many young designers scrape by doing freelance work - one-offs or bits and pieces, choose your own euphemism. Some set up their own business, and everyone knows the survival rate of small businesses.

The fact of the matter is that the UK has more than enough design courses - far more pro rata than any other European country. Fine. The figures quoted in your article indicate the enormous popularity of these courses. Fine. What is not fine is to suggest that the courses lead to an "established career structure" because they emphatically do not.

To say that career prospects are doubtful after design courses is not to condemn them. But students should enter these courses with - in more senses than one - their eyes wide open.

Finally, it is really outdated, as claimed in the article, to advise young people to keep art as a hobby? A few weeks ago, an established and talented ceramist who over the past financial year made £1,000 out of her work was advised by her accountant to register herself as a hobbyist for tax purposes. What happened to the accountant is not recorded.

Yours faithfully,
TERRY JONES
Careers Adviser,
New Barnet, Herts.

Robbins rethink to boost forecasts

by John O'Leary

Ministers are likely to accept their advisory bodies' proposals for a redefinition of the Robbins Principle governing access to higher education, accelerating a further rethink on future student numbers, a senior civil servant told a conference this week.

Mr Barry Wakefield, director of statistics and computing at the Department of Education and Science, told a London conference on the demand for higher education that new information had already overtaken this year's forecasts of student demand. And the picture would change again if the reinterpretation of the Robbins Principle was accepted. There was every indication that it would be, he added.

The National Advisory Body and the University Grants Committee, in their joint submission on future strategy for higher education, proposed that the ability to benefit should replace the more rigid definition of qualification as the guiding principle of assessing suitability for advanced courses.

Mr Wakefield said that new data already suggested an upward revision of the forecasts contained in the Report on Education 100, issued in July. In particular, departmental thinking had changed on the subject of part-time and mature students.

He also revealed new figures on participation rates for higher education, which showed declining proportions of school-leavers securing places despite unexpectedly high enrolments by polytechnics and colleges. The proportion of men with two A levels going on to higher education fell by almost 4 per cent in 1983/84, while the figure for women dropped by 4.7 per cent.

However, the rates for young mature entrants continued to rise for men and women, as did the rates for older students. Mr Wakefield said further work was being done to measure whether higher entry standards had also affected drop-out rates to the point where another revision was needed. He said it was now generally accepted that the forecasts would have to be updated at least every two or three years.

Scots call for contract bid

Scotland's education college lecturers this week called on their management to make a "last ditch attempt" to halt industrial action over a national contract.

The national council of the Association of Lecturers in Colleges of Education in Scotland voted unanimously at the weekend for industrial action, and declared themselves formally in dispute with management.

A meeting was due this week before the ALCES executive and the Joint Committee of Colleges of Education in Scotland, which includes college principals and the chairmen of boards of governors.

ALCES has been angered because of delays in implementing a national contract initially drawn up some eight years ago. The contract on terms and conditions of service was intended to show local variations, and has been accepted by five of Scotland's seven education colleges.

The standard contract was approved by the education colleges' negotiating body three years ago, but has never been formally implemented, since negotiations now come under the new Scottish Joint Negotiating Committee involving all tertiary education staff.

ALCES would be seeking guarantees at this week's meeting from the college principals that there would be no deterioration in conditions of service.

Poll reveals poly ignorance

continued from front page

and industry during the course, than AB groups or the general public thought.

There was also more support for polytechnics from those managers in heavy and manufacturing industry than those in other fields, with considerably higher percentages agreeing that polytechnics provided more practical education than universities, more than in industry and more the sort of education needed in industry. And there was more support for greater Government funding: 30 per cent of manufacturing industrialists thought there should be more money compared with 21 per cent generally.

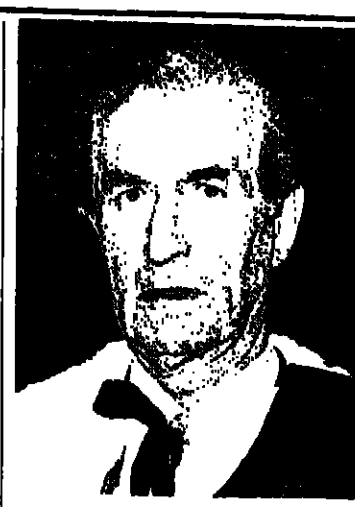
Among the general public the middle classes and those with experience of post-16 education themselves tended to have a more accurate idea of what polytechnics provide.

Well-travelled

Sir, - I must congratulate you on the hard news, indeed a scoop, in the third item of your "Events" column (THES, October 12). The reported appointment of Dr Guillermo Ungo as US Ambassador to El Salvador must surely be another of President Reagan's electoral campaign devices.

Until now I had subscribed to the widely held belief that Dr Ungo held the office of President of the Revolutionary Democratic Front - but perhaps I am confusing him with Dr Guillermo Lingo, pictured in *Time* of October 16.

Yours faithfully,
R. G. McMECKING
52 Heworth Green,
York.



King's asks Westfield for merger

by Ngaiou Crequer

Lord Cameron (above), principal of King's College, London, has written a personal, confidential letter to Professor John Vary, principal of Westfield College, proposing a merger of the two colleges.

King's, already merging with Queen Elizabeth and Chelsea Colleges, has been talking to Westfield since the beginning of the year about collaboration in the arts. These discussions began after Westfield/Queen Mary College negotiations broke down.

Westfield has also been considering a merger with the Central School of Speech and Drama. Most of Westfield's science has already moved to other London colleges as a result of the restructuring programme.

Lord Cameron said: "This is a personal letter from me to John Vary. I have not discussed it with my council or my academic board."

"In our merger with QEC and Chelsea we will be strong in science, but considerably down in arts size. I have said to John Vary: 'Look, you are good in French, Spanish etc, and so are we. Why don't we just hang our heads together?'"

Professor Vary said the proposal would be put to Westfield's relevant committees: "I think we would want to see what King's are saying before we make any comment."

"There is no reason why the Central School cannot be included in discussions, and I've told Lord Cameron this. We are currently putting forward a paper on Central to the university's joint planning committee."

As for the implications the merger with King's might have for the Westfield site, Professor Vary said he thought it was in the university's interest to retain at least one college in the metropolis where teaching took place residentially.

PNL lecturer resigns over 'practice, not principle'

by Karen Gold

The head of the Polytechnic of North London's troubled department of applied social studies, Dr Paul Corrigan, has resigned from his post and from the polytechnic.

Dr Corrigan, whose resignation takes effect from January 1 1985, said that in the climate of attacks on the department over the last few years, he no longer believed the conditions were there to make it possible for him to run it. "I haven't resigned over a principle, I have resigned over practice," he said.

Dr Corrigan was one of 13 lecturers involved in the lengthy court proceedings over whether or not they should attempt to identify protesters at the polytechnic against National Front student organizer Mr Patrick Harrington.

There have been a series of reports and investigations of his department and the department of sociology; they were cleared of Marxist bias by the Council for National Academic Awards but accused of recruiting a "long tail of low achievers" by HM Inspectorate. Recently the Department of Education and Science has put pressure on the National Advisory Body to reduce recruitment to the two departments, and PNL director Dr David MacDowall has frozen recruitment to them until the polytechnic

academic board meets next month.

Another member of the department, Mr Richard Kirkwood, has been barred by the director from entering parts of the polytechnic where he does not teach and where protests against Mr Harrington have taken place.

The action was taken so the polytechnic could fulfil its obligations to the High Court to allow Mr Harrington access to tuition. But a polytechnic spokeswoman said that the letter to Mr Kirkwood said this was not part of disciplinary action against him, though the director reserved his right to institute disciplinary proceedings.

Of the five men who appeared at Highbury magistrates' court charged with public order offences at last Friday's protest against Mr Harrington when he attended lectures at the polytechnic, only one is a student at PNL.

Steven Tasane, 20, charged with obstructing the highway, is a PNL philosophy student. Russell Heath Davey, 22, charged with threatening behaviour, is a Middlesex Polytechnic student. The three others, all charged with obstructing the highway, were Robin Barnett, 25, a community worker; Daniel Budzak, 23, unemployed; and Philip Collerton, 22, a sports secretary. All were remanded until November 14.

'Half an A level' plan wins vice chancellors' support

Vice chancellors this week gave full backing to a Standing Conference on University Entrance report which supports the introduction of Advanced Supplementary levels.

The SCUE report, which has been sent to the Secretary of State for Education, is based on universities' response to the Government's proposals for broadening the A level curriculum by introducing AS levels, worth roughly half an A level.

Lord Flowers, chairman of the Committee of Vice Chancellors and Principals, speaking yesterday at the commemoration day of Imperial College of which he is the rector, said that universities were now publicly and collectively committed to the Secretary of State's proposals for AS level.

"I hope that the schools, for their part, now that they are faced with the reality of what they long desired, will not flinch at the practical difficulties. Between us we can get rid of the evils of over-specialization, and we must," he said.

The SCUE report stresses that the new scheme does not abandon A levels. To gain a university place it will still be necessary to have two A levels. But it will be possible to offer two AS

levels as an alternative to a third A level, and universities would encourage this.

It points out, however, that the place of the new examination will depend crucially on the intellectual level that is established at the outset. "The new examination should be of an exacting standard and we therefore see the relationship to A level standards as one of its essential features."

The standing conference emphasizes, though, that the universities have no wish to penalize young people who are not given the opportunity to take AS levels, but says that such opportunities will grow.

It says that a number of universities have expressed disquiet about the introduction of the new examination without the supporting resources.

The SCUE points out that establishing how AS levels can be incorporated in faculty and departmental requirements has called for extensive discussions. A detailed analysis is to be prepared in November.

The National Association of Schoolmasters' Union of Women Teachers has attacked the AS level proposals as a reaction to a problem which fails to recognize resource implications.

Market forces

Sir, - Your leading article "An eye for market forces" (THES, October 12) rightly pinpointed the element of financial self-interest which appears to be dominating policy on the recruitment of overseas students.

The response from the vice chancellors of the University of Kent, (THES Letters, October 19), also highlights correctly the financial pressure created by the Government for universities to charge average cost fees for overseas students. However, to dismiss the notion of "marginal costs and insist that the overseas fee has to be the average cost, is to ignore the fact that many courses, provided primarily for the home market, choose to admit additional numbers of overseas students at no extra cost to the institution, but at a fee which represents a very real subsidy.

The whole debate highlights the fact that Government policy on university funding has invented the notion of a subsidy to overseas students, and has led to financial considerations dominating educational values. If this were not the case, what is the explanation for the rush to recruit? Certainly not any notions of an enlightened and internationalist educational policy.

Nowhere is this more clearly evident than in the University Grants Committee's advice to Sir Keith Joseph *A Strategy for Higher Education into the 1990s* which states that "in section 9 we discuss the importance of overseas students to our higher education institutions and the universities' prospects of taking more of them". Section 9 is concerned solely with "alternative sources of funding". The reference to the importance of overseas students is "an important source of income for many institutions" (£83m in 1982/83) and stresses the danger that "the supply of students from particular countries may suddenly dry up".

At least the UGC document makes no pretence of considering the presence of overseas students as an integral part of our higher education system on ideological grounds. If we cannot afford to be idealistic, perhaps we can at least be honest.

Yours truly,
GAIL TAYLOR,
Executive secretary,
The United Kingdom Council for Overseas Student Affairs, London.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Engineers' role

Sir, - While the Council for National Academic Awards, the Design Council and the Department of Trade and Industry are to be congratulated on reaching the conclusion that product design is important for securing the future success of British industry, the rationale of their proposal for a 10 per cent content on design matters in management courses is not clear (THES, October 19).

In the same issue, in a review of Eric Lathwaite's book *Invitation to Engineering*, Sir Kenneth Corfield has highlighted the role of the engineer

By degrees

Sir, - As the new term starts I have my AUT sticker "Britain's Universities: working for Britain" proudly displayed in my car alongside the tatty dice and the nodding tiger. What I really need now to flesh out the sort of "Young Farmers do it in their boots" or "Glider pilots do it in the air (when they can get it up)" etc. "Academicals do it . . . How? Can you readers help?

Yours sincerely,
COLIN JONES,
Department of history and archaeology,
University of Exeter.

Youth council

Sir, - I write in the hope of correcting the impression given in the article headed "NUS resigns from British Youth Council" (THES, October 12). The article stated that the NUS nominee elected to the BYC executive had resigned in protest at alleged Foreign Office interference in BYC's work.

It is indeed true that the Foreign

Church and IT

Sir, - I never cease to be astonished by our capacity for creating divisions where there ought to be none. Your report "Churchman attacks impact of IT" (THES, October 19) of the clash between Mr Kenneth Baker and the Rev David Haslam, is typical of the type of clash that can occur when the subject at hand is not fully understood.

Simply, Mr Barker's position is one where he sees information technology as being beneficial all round while Mr Haslam fears the creation of redundancy and de-skilling. This division has a totally unnecessary political tinge to it. Research has shown that the introduction of IT benefits the well-managed firm and damages the organization where archaic management practices are in force.

In the former case, there will be the creation of jobs and the upgrading of the skills of those already employed. The latter case, often driven by a desire to reduce workforce costs, results in a loss of jobs and a de-skilling of those in work. Education will have it that the less enlightened organization

and his importance. As one skilled in the art of the application of technology (the science of the industrial arts), it is the engineer who holds the key position in matters relating to product and manufacturing process development. "Without status in our society for the engineer, engineering and the art of making things are disowned in Britain or at best go unrecognised."

Although it is not widely recognised, it should also be known that the mature engineer is usually not unknowledgeable in matters relating to industrial psychology, marketing and finance which are usually considered the domain of the career manager.

GLC funding

Sir, - The article by Felicity Jones "Hammering on the door" (THES, September 21) raises important issues concerning the prejudices and barriers women have to struggle against to gain access to training in non-traditional skills.

The Greater London Training Board allocates over one-fifth of its budget to women only training projects. Included in our allocation of resources are most of those projects mentioned in the above article as offering exemplary training for women, for example, Haringey Women's Training and Education Centre; and as taking on board the issues of women's training, such as Women In Manual Trades. Perhaps

Office has attempted to influence BYC's attitude to various overseas events - a development that we are all concerned about. But if we are all reason the NUS candidate, Vicky Phillips, resigned, then why on earth did she not say so in her resignation speech on the Sunday morning of the BYC council?

Her speech followed that of another member of the National Organization of Labour Students (who was elected as a NOLS nominee), who also chose

will not withstand the pressures of the market place and fade away with time. The important point is that all should be done to encourage the flexible, self-critical firms to outmanoeuvre the others. In such a situation, the introduction of IT and indeed not beneficial effect. As things stand, there are sufficient political footballs around without the need to create new ones through lack of knowledge.

I, ALEXANDER
Kobler Professor in IT Management,
Imperial College, London University.

to resign. Council delegates were left with the clear impression that both resignations were due to the failure of a third NOLS member (John Lyons) to gain election as one of BYC's two vice chairs.

I suggest that a 10 per cent design content in management courses may easily develop an inadequate awareness of a specialist activity which will degrade further rather than enhance the status of the career engineer and designer. The manager must accept that while he may be successfully schooled in matters relating to finance and business law, his relationship with important aspects of manufacturing expertise must be one of cooperation rather than management.

Yours faithfully,
K. A. YEOMANS
Rickmansworth, Herts.

due to an oversight the Greater London Training Board's role in funding such projects was not acknowledged. These projects are among a number which we have given resources to and which express our commitment to women's training in its broadest sense.

If you would like details of our projects we would be pleased to supply them. In the meantime, we are most perturbed that the article failed to mention the substantial and positive contribution the Greater London Training Board has made to improving the training provision for women in London.

Yours faithfully,
WENDY BRADSHAW
Training adviser,
Greater London Training Board.

Yours sincerely,
DUNCAN BRACK,
Union of Liberal Students executive member,
1 Whitehall Place,
London.

Yours faithfully,
MARTIN GUHA,
Institute of Psychiatry,
London, SE5.

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DON'S DIARY

SUNDAY

Cycle to church in the rain. The city centre of Newcastle is pretty much deserted and so is the church. I make tea for a couple of rootless people who have come in out of the rain, then join the service, taken by a country vicar obviously used to a larger turnout. As always we share the peace with each other, with smiles and a naming of strangers. Leave with a store of tranquility. The rain has stopped, and a taxi full of freshers has halted by Claude Gibb Hall. I'm glad to see they've had enough sense to share the fare.

MONDAY

The building is full of newcomers. The stairs which have echoed empty for three months are now full of noise and excitement. I open the door of our tatty lecture theatre to a "first night" atmosphere - a full house, a suppressed sense of curiosity, lots of evident pleasure. Colin and I start what we hope is a short relaxed double act. We identify one problem at one. Five of the 65 seats are unoccupied after their collapse last spring, so some students must sit on the window sill.

In the afternoon we tell the Higher National Diploma students about "sandwich" placements - the sooner they take decisions about where they want to work the better. Also we give them their first assignment - something to talk about as they queue and queue again. Any questions? Yes, you are expected to work in groups of four. No, you submit one jointly prepared piece of work. Yes, of course you can choose your own team. Almost at once some forward individuals see a ready-made opportunity to be sociable.

TUESDAY

Walk to the Metro wishing, not for the first time, that the station were a bit closer to my house. Get off at Monument and walk in the wine shop to the polytechnic. Deposit boxes in my office, remember to lock. It then set off to meet my year group - 23 business enterprise first years.

We start by being evicted from the lecture room. I had booked - a foretaste of what is to come. We go gracefully, as 48 quantity surveyors obviously have more need of the space than we do. Happily no one has occupied the room I have booked for later in the day, so we start by rearranging the furniture, to turn it into a place for a party.

Then we play the usual "palping" game, when one student introduces another for a couple of minutes, having first chatted to them about aspirations, life history and other matters. I ask one couple to sign against the wall about a metre apart. They grin apprehensively as I produce a camera. Thanks to 1,000 ASA film I get a set of cheerful mug shots in 10 minutes.

After this, the character of the room changes as more students arrive bearing gifts and staff turn up with wine and donations. By 12.10pm we have a party, complete with lecturers chosen from among those who can be relied on to talk to students and not huddle together in a corner.

By 1.30pm the wine has gone and so have the students. Seeing the washing up the head of faculty finds he has an urgent meeting, so two of us set up a production line to wash and dry. Then I walk across the city to catch up with my tutorial group, who are doing their first "field visit" to a builders' merchants in Forth.

Banks, chosen because it will make them see the old city, with its dramatic view of the Tyne and its six bridges. The visit goes well, and the students go off to their new-found homes. I return to the polytechnic to meet students who are my tutees. Home to a 15-year-old struggling with a geography project on the redevelopment of Byker.

WEDNESDAY

Encounter Gordon Mitchell, head of faculty, brandishing a letter. This means trouble. In this case the trouble is at least constructive, for British Rail want me to plan a course for supervisors, if the price is right. Phone our short-course organizer and agree to talk with him about costs.

I find the tutor for the day release Higher National Certificate students, and fix times to see them later in the day. What about the evening-only group? I agree to see them at 7.20pm, but it doesn't turn out that way. After chewing my sandwiches while checking the typescript of a case study I find the HNC students. I give them their first cross modular assignment. Those who have done a national certificate look nonchalant. The mature students look bewildered by Business and Technician Education Council jargon, and no wonder. I translate the requirements into English and they relax.

Home for tea, then back to work. En route to my office I find the HNC evening group whose lecturer appears to be elsewhere. Decide to *ad lib*, so I give them their briefing on BTEC requirements, cross-modular assignments and the like, then set them a simple task in marketing. Leave them working and walk to the students' union for real ale in plastic glasses.

THURSDAY

Wear my respectable suit - a fact noted sarcastically by teenagers at breakfast. In deference to the suit I walk to work. I note that four internal memos appear to have arrived in the middle of the night.

Head to the staff office of a nearby department store, to be greeted by the staff trainer. She in turn takes me to the training room, somewhere in a airy attic behind the scenes. A dialogue with this year's graduate trainees - all day-release students - follows.

FRIDAY

A day without appointments. I start by planning next week's teaching, then deal with the mail - three requests of references and one letter from a publisher demanding the return of an inspection copy long since paid for. After coffee I visit a colleague who will teach a scheme I took last year. I try not to wine at his different way of doing things.

After lunch I tidy up my office, stopping when two waste-bins are full to the brim. I'm about to escape early, at 4.30pm, when a third-year arrives to discuss career prospects.

SATURDAY

Follow the instructions of Newcastle University and drive to their mansion at Close House, near Wylam. The pictures of the Tyne Valley look handsome even in the rain. Discover that I am part of the inevitable queue of first-year students waiting to enrol. Eventually all the part-time MEd students gather for speeches of welcome, just like the ones we gave on Monday, only longer.

Note, cynically, that financial stringency in the public sector means not enough seats for all the students, while in the university it means charging £5 for a salad. After the speeches we are asked to form pairs and talk to each other... the sense of *deja vu* grows through the day.

David Stewart-David

The author is principal lecturer in business studies at the Newcastle upon Tyne Polytechnic.

Students, lecturers lobby MPs

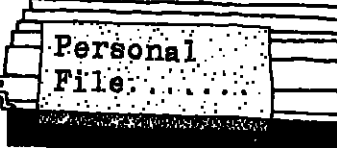
by Ngaiio Crequer

Hundreds of lecturers and students lobbied MPs on Wednesday in advance of today's debate on higher education, the first for three years.

The lobby was jointly organized by the Association of University Teachers, the National Association of Teachers in Further and Higher Education, and the National Union of Students. Government and Opposition education spokesmen also attended a panel and rally in the House where some of the debate's key issues were highlighted.

Mr Robert Rhodes James, Conservative MP for Cambridge, and spokesman on further and higher education, said he would call for a new look at how Britain funds research. "I think the way we fund research, through research councils, is a pretty unsatisfactory way of doing it. We should have another look at it."

Man from industry seeks cooperation



by Patricia Santinelli

The "man from industry", Mr Bryan Nicholson, new chairman of the Manpower Services Commission, seemed after only six hours in the job, undaunted by the prospect of an imminent commissioners' meeting, at which the main item on the agenda was to be the controversial White Paper Training for Jobs.

Mr Nicholson, who has been seconded from his chairmanship of Rank Xerox was quick to make clear that he held firm views about the White Paper. "It has been published and decided on, therefore it is not a question of whether it will be implemented but how," he said.

He saw the White Paper as a fundamental issue which had to be agreed by all parties. He wanted and sought cooperation - one of his keywords - and not conflict. He saw the role of the MSC in education as complementary rather than as a take over.

Mr Nicholson's appointment was a great surprise to people who expected the job to be filled by a well known public figure. Indeed, his cool businesslike appearance seems somewhat remote from the more flamboyant personality cult style developed by his immediate predecessor, Lord Young.

Like previous chairmen, Mr Nicholson was recruited directly by Government, after wide consultations. It was by no means a cheap transaction. Mr Nicholson's £76,000 a year salary continues to be paid by Rank Xerox, with the MSC reimbursing the princely transfer fee of £46,000 a year directly to the company.

Mr Nicholson owes no allegiance to ministers, unlike Lord Young who has close connections with the prime minister and two secretaries of state. Although a Conservative voter, Mr Nicholson has not been politically active for 20 years. Before his appointment he had never met Mr Tom King and Mr Peter Morrison, the Secretary of State and Minister for Employment.

Mr Nicholson was not prepared to commit himself on what his reactions would be should it come to a conflict between the commissioner's views and that of politicians. His reaction would depend entirely on the issue.

He says that he is broadly in agreement with the Government's strategy on education and training, but before accepting the job - he regards it as one of the most exciting challenges in Britain - he read the MSC Corporate Plan to make sure that this was the case.

Mr Nicholson is openly confident that the MSC will profit from his background and experience which since he started at Unilever as a manager trainee has been totally in industry.

He sees the MSC very much as big business - only slightly larger with its 22,000 employees and £2.2 billion budget than his previous operation. He points for example to the vast network of job centres which need to be managed.

But Mr Nicholson is also very keen to develop and experiment, and says that radical changes cannot be ruled out. He is an admirer of the report *Competence and Competition* produced by the MSC by the Institute of Manpower Studies.

He said the Government was listening and consulting and its proposed Green Paper was at an embryo stage. He hoped there would be a dialogue between Government and the professions.

Ms Dinna Warwick, general secretary of the Association of University Teachers, said if the Government wanted the universities to respond to change, they must provide the resources to do it.

She hoped the Government would be persuaded to provide at least level funding over the next few years and find money to restore the 35,000 places lost in the last three years.

Mr Clement Freud, Liberal education spokesman told the rally: "The record of this Government on higher education is one of meanness, incompetence and neglect. They have undermined what was once, and should become again, an education system second to none."

On student numbers, the Government projections of future demand are "little more than post hoc justifications for their policies. They must come out from behind their smoke-screen of statistics and give an immediate assurance that they will stop using polytechnics to bolster the age participation rate without providing them with the necessary funds."

Mr Andrew Bennett, Labour's spokesman for higher education, told lecturers at Bath University that at today's debate he would demand from Government a clear commitment to expand higher education.

He would point out that units of resource were dangerously low, putting quality of courses at risk. He would challenge the Government to admit they were wrong to cut the universities in 1981 and to ask universities and public sector institutions to plan for cuts of 1 or 2 per cent over the next 10 years.

Dons vote to end apartheid investments

Oxford University dons have voted for a resolution aimed at stopping future direct investment in any South African firms until apartheid is abolished.

The motion passed by 22 votes to 11 in congregation, the dons' parliament. It did not reach the required figure of 75 per cent in favour to become policy binding on the university's hebdomadal council. It is now certain to go to a postal vote.

The resolution, proposed by Professor Michael Dummett, professor of logic, called on the university to sell its South African securities "as soon as alternative investments of equal or greater yield become available".

Professor Dummett used his speech to counter all the usual objections to the motion, particularly that as trustees the university has a duty to maximize investment yield whatever that involves.

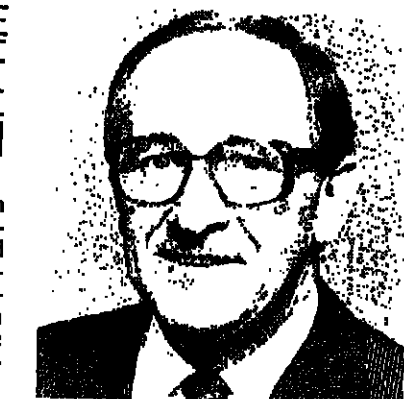
He also rejected the charge that such a motion might be the thin edge of the wedge, and claimed that South Africa was a special case given the UK's enormous links with the country. The argument that Oxford would just £50m in endowment income could make little impact on apartheid was like saying it did not matter if an individual did not vote.

He told the *THES* after the debate that he hoped dons would give the resolution the enormous majority it deserved in the postal vote. "It would be a discredit to the university if we voted the other way. We need some strong declaration against the evil of apartheid."

The motion was opposed by Dr Clark Brundin, vice chairman of the general board of faculties, on behalf of the council. He argued that the university should not be involved in political gestures, and that trustees were legally required to maximize investment returns regardless of politics.

The vote marks the latest step in a long campaign by the students' union to enshrine the policy of disinvestment in university policy. Three student speakers took part in the debate.

Constitution agreed by 27 votes to seven to reduce the retirement age of Oxford dons from 67 to 65. Two speakers against were concerned about attracting older overseas academics to work in Oxford, and binding the university's hands.



Outlaw computer pirates, says study

by Karen Gold

Stealing computer information by copying under the Theft Act, with exemplary prosecutions of local education authorities and computer clubs, concludes a Newcastle Polytechnic study of computer piracy.

The study by law lecturer Anne Staines and Ian Staines is a uniquely extensive survey into the computer software industry, and provides a dating quality of courses at risk. He would challenge the Government to admit they were wrong to cut the universities in 1981 and to ask universities and public sector institutions to plan for cuts of 1 or 2 per cent over the next 10 years.

Their radical conclusion following the discovery that over half the firms questioned suffered from continuing or "seepage" - one-off copying by individuals - of their products, is to call for criminal prosecutions.

"Present information cannot be taken as evidence in the civil law copyright case," the report says. "We suggest that the Theft Act be amended to include information within the definition of 'property' capable of being stolen within the terms of that Act."

A number of Theft Act prosecutions of computer clubs, local education authorities and large business organizations would, we submit, have significant impact on the incidence of seepage by striking at the underlying attitude which is the root cause.

It found that software company losses through counterfeiting and illicit copying by individuals and groups reached a massive £24.125m according to an estimate by the companies themselves.

Why the English language continues to rule the waves

by Ngaiio Crequer

A combination of political, geographical, industrial and cultural factors is the reason for the overwhelming predominance of the English language, Professor Randolph Quirk, vice-chancellor of London University, said this week.

Professor Quirk, a leading international scholar of the language, speaking at the English Language Fair, at the Barbican in London, said these factors were more important than any intrinsic qualities of the language.

There were five factors that gave a language international acceptance and authority. First native speakers of the language had to have had a sustained period of political and economic power, such as that of the Roman Empire. But a counter example was Russia, where despite its power, its language had not been accepted worldwide.

Second, there needed to be a wide geographical spread of native speakers, such as the Anglo-American hegemony. Third, there needed to be a critical mass, where a lot of people were speaking the language. Yet counter examples were the Chinese or Hindi.

Fourth, the native speakers needed to belong to countries well-known and respected for their inventive genius and industrial enterprise (even if its economic power has declined). Finally, there needed to be a cultural prestige, some form of association with cultural values. English had been particularly strong since Shakespeare in this respect. Yet counter-examples were Germany, Austria and Czarist Russia.

Professor Quirk said the language's good and bad qualities had nothing to do with its predominance. Its strong points were that it was relatively easy to attain a high degree of fluency, its enormous vocabulary enabled more precise shades of meaning, and it was very flexible.

English had a cosmopolitan flavour. "It is not that English speakers do not care about their language. Most of us are proud that Winston Churchill, Arnold Bennett, James Joyce and the Beatles had at their disposal a material rich and flexible enough to say what they wanted to say. We see no reason to build tariff walls round it or control what free people should do with it."

The international standing of English had never in recorded history, been rivalled. There were more films, more television, more conferences, more pop songs in English than any other language.

It was the most popular medium of instruction in higher education, it was the language of air and sea travel, of football, athletics, and of world trade. It was the most frequently used language in science journals.

But he voiced two concerns. Because English was so entrenched there was a disincentive to learn other people's language. Second, we had been reluctant to observe an international standard.

Clergy attack theology teaching

Three Anglican canons have protested that theology - once the "queen of sciences" - is now "almost totally discredited" with little prestige or importance at university level.

They claim that theology students aiming at the ministry spend too much time studying German liberal ideas, the so-called "higher criticism" which is compulsory for examination purposes, while the traditional classical studies are neglected.

Canon James Ayre, rector of Chesil, Cheshire, the Reverend John Pearce, vicar of St Barnabas, London, and a presbyter of St Paul's, and the Reverend Peter Cook, vicar of St Andrew's Chesil, made their protest in an open letter to the *Daily Telegraph*.

Canon Ayre told *The THES* that young men seemed to be leaving the church to study in colleges and universities and ending up with no faith at all when they returned. "It is all very distressing. There seems too much modern theology taught today," he said.

Counterfeiting accounted for £4.8m losses and disguised imitation for £2.45m losses. But the really large losses were to one-off copying losses at a joint total of £8.5m and counterfeiting and imitation losses as £4.5m and £1.45m. Their combined losses of £14.545m comprised 60 per cent of the total.

Fifty-six per cent of the 467 respondents to the survey said they had suffered from piracy; most expected it to increase, but also ironically thought their own company did not suffer as badly from it as others.

They generally thought action should be taken against it, but had no great evidence in the civil law copyright safeguards as they stand.

The researchers conclude that there is still a place for the civil law, but the Copyright Act should be amended to include computer software imitation along the lines of literary plagiarism. But the Theft Act should also be amended to include both professional counterfeiting and one-off copying.

Piracy of Computer Software in the United Kingdom by Anne and Ian Staines, £10, available from Newcastle-upon-Tyne Polytechnic Products Ltd, Ellison Building, Ellison Place, Newcastle-upon-Tyne, NE1 8ST.

Success for OU campaign

The Open University attracted £50,000 into the campaign fund which it set up to inform the public about the damage which will be caused to the university through the proposed 13 per cent resource reduction.

The university's external relations steering group decided soon after it was set up by the vice-chancellor that the university's grant would not be used to finance a campaign.

The campaign aims to correct misconceptions, such as the idea that university careers for middle-class women and to demonstrate the consequences of the Secretary of State's action.

All full-time and part-time university staff, students and graduates were invited to contribute to the fund which has swelled considerably with donations and pledges. It was reported in a paper prepared for the first seminar held by the new Voluntary Adult Education Forum.

Briefing notes and a video have been prepared for internal use to answer any queries for those wishing to know more about the facts. So far 112 parliamentary questions have been asked about the university.

The Voluntary Adult Education Forum, the consultative body of voluntary and non-governmental agencies with an interest in adult education now has 20 members including such bodies as the National Union of Townswomen's Guilds and Pre-School Playgroups Association as well as traditional educational bodies.

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Three Anglican canons have protested that theology - once the "queen of sciences" - is now "almost totally discredited" with little prestige or importance at university level.

They claim that theology students aiming at the ministry spend too much time studying German liberal ideas, the so-called "higher criticism" which is compulsory for examination purposes, while the traditional classical studies are neglected.

Canon James Ayre, rector of Chesil, Cheshire, the Reverend John Pearce, vicar of St Barnabas, London, and a presbyter of St Paul's, and the Reverend Peter Cook, vicar of St Andrew's Chesil, made their protest in an open letter to the *Daily Telegraph*.

Canon Ayre told *The THES* that young men seemed to be leaving the church to study in colleges and universities and ending up with no faith at all when they returned. "It is all very distressing. There seems too much modern theology taught today," he said.

Give £25,000 for centenary

University College, Bangor, have donated £25,000 to the college's centenary fund, and the final figure may reach £40,000.

Mr John Jones, assistant registrar of the university said the staff action was "good old emotional Welsh fiery commitment".

The donations were all pledged at two meetings of about 160 staff from all sections, academic, clerical and maintenance. The meetings took place on the first day of the incoming

principal, Professor Eric Sunderland. Mr Jones said "I think there was some symbolism in that. They wanted to show him a strong degree of commitment to the institution."

Since the meetings, the rest of the £50 staff have been written to, and the university estimates that a further £15,000 will be forthcoming.

The college hopes to raise £1m through the appeal. The money will help to fund a Research Centre Wales to provide facilities to study a wide range of subjects about Wales, including its agriculture, coastline, economy, forestry, history and language.

There will also be a research foundation with endowments to support research posts in all departments. Six inter-departmental research projects have been immediately launched; they are in the Centre for Arid Zone Studies, in the new electronics, the unit for medically-related research, the Institute of European Finance, the applied computer technology unit, and the forest products research technology unit.

New horizons and wavelengths are in store for MUTV, the television production arm of Manchester University which is linking, via live satellite, with the University of California, San Francisco, to provide transmission for the British Institute of Radiology conference.

MUTV was redesigned in 1982 as part of the commercialization of some university services. It is producing broadcast standard video and film not only for teaching but increasingly commercially.



Courses

The British Council INTERNATIONAL SPECIALIST SEMINAR

Educational Administration: The Management of Change
7-19 July, 1985 in Exeter

This seminar, which is being organised in association with the Society of Education Officers, aims to provide an opportunity for senior educational administrators - national, regional and local - to consider together the essential mechanisms for managing change effectively, whether in a developing or a contracting situation. It is intended to identify the appropriate objectives for a public education service by reference to the achievements - and the needs - of the United Kingdom and other participating countries.

The seminar will be directed by Barry Taylor, Chief Education Officer of the County of Somerset, part-time consultant to OECD and Chairman of the International Committee of the Society of Education Officers.

Qualifications of members

The seminar is intended for those carrying substantial managerial or administrative responsibility for an education service at national, regional or local level.

There are vacancies for 30 members.
Fee: £885 (Residential only)

Venue and accommodation

This is a residential seminar. Participants will be accommodated in single study bedrooms at Crossmead Conference Centre, which is part of the University of Exeter. The seminar sessions will also be held at Crossmead.

Applicants are advised to apply before 19 March 1985. Further information and application forms for this, and other British Council specialist courses, can be obtained from your local British Council office or from the Director, Courses Department, The British Council, 65 Davies Street, London W1Y 2AA.

Lecturers press early pay claim

by Karen Gold

College lecturers are looking to the Government to meet their 1985 pay claim for around 20 per cent, acknowledging it is unlikely that local authority employers will be able to meet it in full.

The National Association of Teachers in Further and Higher Education announced this week that its national executive proposed to accelerate the usual pay negotiating timetable, starting 1985 negotiations next month, instead of February 1985 when they were due to begin.

The decision, which has to be agreed by the union's national council, is designed to coincide with the school teachers' 1985 pay campaigns which have already begun, but also in acknowledgement that their claim for even restoration to 1974 pay levels is likely to take a long time.

The Nafthe national executive has agreed to a pay strategy involving three claims: to the local authority employers represented on the Birmingham further and higher education committee. They want the committee to accept that pay levels should return to the comparability with university teachers and professionals agreed in the Houghton report of 1974 (something the committee has so far refused to agree); that the 1985 pay agreement should take a substantial step towards restoration of the Houghton levels; and that there should be a clear programme towards full restoration.

Full restoration to Houghton levels would mean an increase of 40 per cent on the salaries bill, though widely different increases on different scales, according to Nafthe figures. The union's negotiating secretary, Mr David Triceman, said that for 1985 Nafthe would expect about half of this as a substantial step towards restoration.

But the NEC statement agrees that even among those local authorities with some financial scope, there would not be enough money to achieve "what is needed by the education service and its staff".

Hush over tobacco

by Olga Wojtas
Scottish Correspondent

Academics are markedly reluctant to criticize research funding by the tobacco industry which has been condemned by the British Medical Association, the Faculty of Community Medicine, and other health organizations.

The Health Promotion Research Trust was set up at the instigation of the Government. The industry agreed to provide up to £3m a year to a total of £11m.

It is currently sponsoring more than 30 health research projects, many conducted by academics, but it has not so far publicized who has received grants on the grounds that publicity could hamper studies in their early stages. However, it claims grants will be revealed in its annual report, expected at the beginning of next year.

One of the few grants to be announced is an initial £500,000 for a national survey on health behaviour conducted by units at Cambridge University, led by Professor Sir John Butterfield, regius professor of physics and master of Downing College.

Sir John, chairman of the trust, has said the cornerstone of its policy will be priority for work which promises to contribute directly and practically to health.

But both the BMA and the Faculty of Community Medicine have strongly advised their members to have nothing to do with the trust, and the association - which this month launched an anti-smoking campaign - is to tell the Government that it should be closed down.

But academics have remained remarkably quiet, and even professors who say they have no intention of applying for funds have refused to be quoted directly.

One professor of community medicine said: "I would ask whether one should be taking this money on ethical grounds, because it is giving the tobacco industry the cloak of respectability. But I would find it difficult to argue in public against the need to do work which some people are contemplating."

A professor at a London University teaching hospital said: "I feel one of the problems is that at the moment nobody

can afford to have principles. The research council has got so much money that people are being forced to get money where they can."

Some academics also claim that the Government, having set up the trust, is now pressing institutions to apply for awards.

Dr David McQueen, director of the health and behaviour change research unit at Edinburgh University, said his group had been approached by the Common Services Agency, which works from the Scottish Home and Health Department, and asked to undertake a Scottish health behaviour research project. The trust was suggested as the likely funding agency.

He said: "We're considering making an application but there are a lot of mixed feelings, with some people totally opposed to taking money from what they see as a source of ill health, and others arguing that good can come from bad."

Dr McQueen added: "My own feeling is it would have been a lot better if the industry had put the money into a trust that had no relation to health."

White Paper: 'there was a directive'

by Patricia Santinelli

The Manpower Services Commission educational representative, Mr Wilson Longden, has decided that he will bow to Government's wishes over the White Paper Training for Jobs, expected to be the main item at this week's meeting of the commission.

Earlier this month, Mr Longden said that he would lead a rebellion against the White Paper, if he found that the Government and the MSC had not been issued to implement Training for Jobs.

But Mr Longden said this week that after thorough investigation, he was now convinced that a directive had been issued. "Therefore I have no alternative but to accept that under the 1973 Employment and Training Act we have received a definite instruction to support the transfer of non-advanced further education away from local authorities to the MSC."

The White Paper has been a source of bitter controversy since it was published by the Government at the end of January. Its main opponents have been the local authorities associations which stand to lose some 25 per cent of funds and responsibility for NAFF to the MSC. The first part of the transfer has already been implemented with the deduction from the rate support grant of funds from NAFF.

Mr Longden said that he would be explaining his position to the professional education interests he represents when he met them prior to the commission's meeting. He believed that they would accept this and work with him to ensure that the interests of the system and students were properly represented.

"There are extremely complex issues regarding funding which have to be sorted out. The MSC's figures were based on 1982 calculations, and although there is nothing we can do to affect this financial year, we may achieve something for next year," Mr Longden said.

Meanwhile, a split has emerged between Labour and Conservative members of the Association of County Councils over proposals to back down from the long standing opposition to the White Paper and start negotiations with the MSC.

Conservative members of the association proposed at last week's meeting of the education committee that the ACC should enter into discussion with the MSC about effective arrangements for the transfer of funds, in the light of difficulties being encountered by a number of local authorities.

Labour members however said that they would only be prepared to meet the MSC not to discuss arrangements but to demand their money back. The whole matter has now been referred to a meeting of the ACC's executive early next month.

Bleak outlook on student housing

by Paul Flather

Tighter rules governing student travel allowances, increased intakes at polytechnics and colleges, and a shrinking market for rented rooms, all combined to make it far harder for students to find suitable housing this year.

The National Union of Students estimated that one in four students has to find rented accommodation at the beginning of each academic year, and that the market for rented rooms is shrinking. The union said that the Government and the MSC had not been issued to implement Training for Jobs.

But Mr Longden said this week that after thorough investigation, he was now convinced that a directive had been issued. "Therefore I have no alternative but to accept that under the 1973 Employment and Training Act we have received a definite instruction to support the transfer of non-advanced further education away from local authorities to the MSC."

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student housing black spot. 200 students were reported sleeping on the floor at the start of term. There are few flats in the area, and students baulk at bed and breakfast living with fixed meal times, no cooking facilities, and limited privacy. Housing officers who worked round the clock say the worst is now over.

Landlords on Hayling Island, opposite Portsmouth Polytechnic, are apparently puzzled that all the students have disappeared. They are now living on the mainland to avoid the ferry charges.

100 more students from Bath College of Higher Education joined the rush to find digs in the city this year even though they faced £5 a week travel fares.

Many students at Swansea have been forced to use holiday guest houses in the Gower Peninsula, paying on average £8 a week in travel costs. Some 200 students from Newcastle University were reported sleeping on mattresses in libraries and common rooms even as late as last week.

Mr Paul Walentowicz, NUS housing officer, said cuts in travel expenses and the increased intakes of polytechnics and colleges had made it one of the worst years for housing problems. "Unless there are reforms the problems are likely to get worse each year," he warned.

Problems in central London are said to be the worst with one NUS survey suggesting students are spending £205 a year on travel alone. A new housing survey shows 95 per cent of all two-bedroom flats cost at least £100 a week to rent, and half cost more than £200 a week.

Central and North London Polytechnic spent £10,000 on a joint promotion in the summer to find extra student rented accommodation, ending up with 280 extra places. Some 50 to 60 London University students have also occupied an empty office block at 66-72 Gower Street in protest at high rents and shortage of accommodation.

The students stress theirs is an entirely non-political protest, and they want the university to review its housing programme and arrange "crash-pads" for homeless students. "This is a needs issue. We are desperate," a spokesman said.

The NUS is also worried about proposals under discussion to relax the existing Rent Act which they believe will leave students with even less security of tenure and too frightened to complain of sub-standard accommodation. Mr Simon Hughes, Liberal MP for Bermondsey, tried unsuccessfully this week to force the Commons to debate the student housing crisis.

The changes in travel grants will be highlighted in negative prayers in the House of Lords this week, and the Commons next week. NUS officers in Scotland, where travel allowances have not been reduced, report few problems this year over student housing.



Defending a precious freedom

The Department of Education and Science may be willing with bated breath for the University Grants Committee's advice on tenure. The Association of University Teachers is likely to be less enthusiastic. The committee gave nothing away in its recent report on future strategy. Maybe rightly so. The key question for those who go along with the Secretary of State's desire to abolish tenure is "how do we protect academic freedom?" The UGC will need to give it some thought.

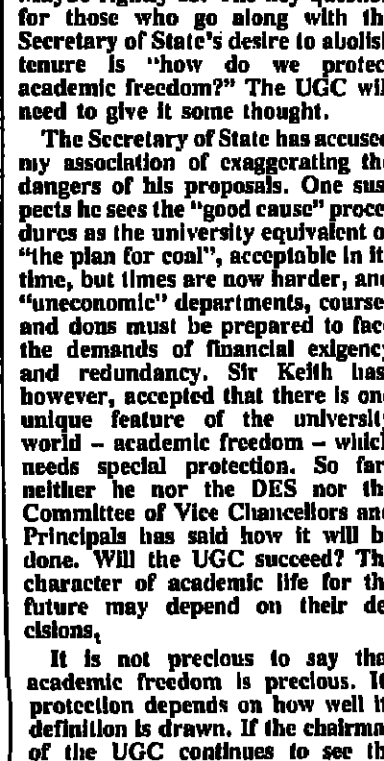
The Secretary of State has accused my association of exaggerating the dangers of his proposals. One suspects he sees the "good cause" procedures as the university equivalent of "the plan for coal", acceptable in its time, but times are now harder, and "unconformable" departments, courses and dons must be prepared to face the demands of financial exigency and redundancy. Sir Keith has, however, accepted that there is one unique feature of the university world - academic freedom - which needs special protection. So far, neither he nor the DES nor the Committee of Vice-Chancellors and Principals has said how it will be done. Will the UGC succeed? The character of academic life for the future may depend on their decisions.

It is not precious to say that academic freedom is precious. Its protection depends on how well its definition is drawn. If the chairman of the UGC continues to see the problem in terms of "idle academics" who need to be chucked out, or changes in fashion of subjects which require judicial axing, the UGC will fail in its duty to the profession and to the Secretary of State.

Of course some academics rest on their laurels (though not necessarily because they get older); of course some are lousy teachers, usually because they or their institutions don't believe they need to be taught to teach; but neither pose substantial problems for universities and, if the will is there, both can be resolved. As far as restructuring is concerned, unless the Government is in reality preparing the way for wholesale closures, it can be achieved by planning and local cooperation.

The problem of protecting academic freedom is a good deal more difficult. The chairman of the UGC seems to place a lot of faith in the existing Employment Protection Act. That raises a hollow laugh. Any experienced trade union official will tell you how difficult it is to prove victimization or discrimination, even based on practical evidence. It will be impossible to use it successfully in the realm of ideas. Academics have a social and political role, especially in certain disciplines; they are leaders of opinion; their views are brought to bear on a variety of issues not all narrowly restricted to their own disciplines. Extending procedures to protect their freedom to criticize, comment and dissent.

Is the UGC prepared to see the security and continuity essential to the fostering of intellectual advance replaced by an atmosphere of caution and compromise? There is absolutely no logic in disrupting an arrangement which has worked well for most of the time merely to deal with the problem of a small number who are incompetent or unable to contribute.



Nephrops norvegicus (L.) - the scampi, or Dublin Bay prawn to the layman - has won Mr Roland Wheeler-Osman, photographer in Hull University's department of zoology, his second successive prize in the Institute of Science Technology International photographic competition. The picture headed the natural history (transparencies) section. This year's entries were displayed at the Laboratory '84 exhibition held at the Barbican Centre, London.

Racial discrimination found on YTS courses

by Patricia Santinelli

The Youth Training Scheme is discriminating against black and Asian youngsters according to a Bristol University report.

The report which was commissioned by the Manpower Services Commission says that the data obtained on the experience of trainees suggests there are grounds for general concern about placements and withdrawals.

It says: "It appears that unsatisfactory experience may affect black and Asian young people more than others and there was clear evidence of racial discrimination in some placement processes."

The report looked at a county council in the South West, a metropolitan borough and two inner London boroughs. The way schemes were described resulted in ethnic minority young people being placed on the same schemes as those with special needs because of the confusion between disadvantage and discrimination.

There was underrepresentation of black and Asian young people on Mode A schemes and an over-representation of them on Mode B schemes. To combat labelling of the modes, the report suggests that quality control should eliminate the poorer aspects in both schemes. Cutbacks should be made on the basis of quality rather than cost, more care should be taken over the evaluation of schemes, and better training should be provided for those who advise on the suitability of schemes.

It recommends that the MSC should do more to actively promote its policy on ethnic minorities and equal opportunities. It could also implement mixed ability intake on schemes, thereby allowing young people with no formal qualifications to join companies which tend to aim for the higher flyers.

Ethnic minorities and the Youth Training Scheme, available from Sales Manager, MJB, Room E309 MSC, Moorfoot, Sheffield, S3.50.

HMI finds much to admire in poly research

During last summer and autumn HMI inspectors visited virtually all 30 polytechnics to discuss science research. Now the inspectors have published a report of measured admiration for the quantity and quality of the research found, and the hard-pressed staff who produce it.

The report emphasizes that the quality of the research was beyond the inspectors' remit. They were seeking "information upon the extent of the research activities in science and the effect of these upon the undergraduate experience."

They found that although a link between the quality of individual teachers and research activities was unproven, there was a link overall. "The undergraduate curriculum has been enriched as a consequence of the research activities of staff", the report says.

It picks out a number of areas where the curriculum was enhanced through research in all polytechnics. These are:

- 1. The use of research in the design of new courses.
- 2. The use of research in the design of new equipment.
- 3. The use of research in the design of new teaching methods.
- 4. The use of research in the design of new assessment methods.
- 5. The use of research in the design of new learning resources.
- 6. The use of research in the design of new support services.
- 7. The use of research in the design of new management systems.
- 8. The use of research in the design of new financial arrangements.
- 9. The use of research in the design of new legal arrangements.
- 10. The use of research in the design of new social arrangements.

Table 1 - Number of full-time research assistants/students and source of finance

	1978	1980	1983	I.E.S. research council	Industry
Poly 1 Science faculty	6	13	12	13	12
	1980	8	14	11	11
	1983	5	14	15	15
Poly 2 Chemistry department	1980	6	4	3	3
	1981	5	2	3	3
	1983	1	2	6	6
Poly 3 Science faculty	1979	13	0	1	1
	1981	6	1	0	0
	1983	1	5	1	1

Table 2 - Teaching and research commitments in one polytechnic department

Average teaching hours per week (senior lecturer, principal lecturer average)	16.4
Average hours per week on departmental duties	4.4
Average hours per week on remissible research	2.4
Total hours per staff per week	23.2
Total hours per staff required by local education authority on class contact duties	16.4

Research for which teaching hours should be remitted. "In general" the report says, staff who are active in research appear to spend a minimum of eight hours per week on this activity and often considerably more outside term times.

Gloucester prison department gets clean bill

Gloucester prison education department has achieved a "commendably high status", said the report.

It states that the education officer, with the full support of the prison governor, has managed to persuade prison and ancillary staff at all levels of the importance of education.

The general level of teaching is good, and the accommodation and resources are generally adequate.

Set against this glowing account, the report highlights some deficiencies. It hopes that group and class-room activities could be encouraged in addition to one-to-one tuition. Storage space and office equipment is limited and links with outside agencies, though some kind of advisory panel are suggested.

Lecturers oppose adult transfer move

Birmingham's adult education lecturers have called for an integrated service within the education department to counter plans to transfer responsibility to the leisure department.

The main objective of the transfer was to make use of sports and recreational facilities out of class hours and at weekends and £200,000 had been earmarked to be switched from education to fund the new system.

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But the National Association of Teachers in Further and Higher Education branch says that a proper survey should have been made of existing provision and objectives drawn up before such decisions were taken.

In a formal response to Birmingham City Council's performance review committee, Nafthe have called for the present proposals to be withdrawn and for the education department to be instructed itself to draw up plans for dual use of facilities.

Nafthe says it is difficult to recognize the range of adult education services currently available from the review committee report. Mr Vivian Yates, branch secretary, added: "Not least of the dangers is that adult education classes could become liable for VAT with the consequent increase in fees."

Teacher opposition to the plans have successfully delayed any change and cannot now go before the full council until December by which time it is hoped that fuller consultation will have taken place. The education group of Labour city councillors on the Labour-controlled council is opposed to the changes.

Table 3 - Polytechnic income

	External funding	Internal funding
Polytechnic 1	£750,000 (1981/82)	£551,000 (1981/82)
2	£103,000 (1982/83)	£173,000 (1977/83)
3	£173,000 (1977/83)	£322,000 (1978/83)
4		
5		
6		

The author is general secretary of the Association of University Teachers.



A game of CAD and mouse

The Secretary of State for Education and Science, Sir Keith Joseph, tries his hand at computer aided design - in his case at drawing the perfect circle - during a tour of IBM's travelling technology exhibition. Sir Keith opened the exhibition this week in the gardens of the Natural History Museum.

Earlier Sir Keith had a go at the "mouse" - a device designed to call up and retrieve information from computers without the use of a keyboard. Sir Keith regrettably rejected sneaking a look at highly personal and confidential files and opted instead for a look at the sales figures.

The travelling exhibition is part of a three year programme.

IT sociability network modelled on Harvard

The Economic and Social Research Council is planning to foster a network of university research units specializing in the social aspects of information technology, with a nerve-centre modelled on the Harvard Centre for Information Policy Research.

The council decided last week to set aside £60,000 to appoint a director to foster the satellite units, and to prepare a drive to raise £1m from external sources by 1986 to support a coordinated research programme in the field.

The decision follows a Cabinet Office report exactly a year ago urging the research councils to consider setting up a British equivalent of the Harvard centre, which has proved extremely influential in American circles.

The council noted at its meeting that almost all public funding in the IT field by the Avey directorate and the University Grants Committee has been for technical study. The social, political, economic, and managerial implications it feels have been neglected to date.

The likelihood is that the ESRC will put more resources into centres like the Technical Changes Centre, the Science Policy Research Unit at Sussex University, and Manchester University, already involved in this kind of IT-related study.

This would also tie in with the Cabinet Office report, prepared by the Information Technology Advisory Panel for the prime minister, which mentioned SPRU and the TCC as suitable centres to become the focus for other groups working in the area, just as the Harvard centre has in the US.

The ESRC is now planning further talks with interested parties including British Telecom, the Office of Telecommunications, the Post Office, the Avey directorate, the British Library, and the Science and Engineering Research Council.

The decision also marks a return to the Diamond report, prepared in 1980 for the council, which recommended further research in media and related studies but has not been taken up until last week.

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PARTY LINE

Learning from the American economy

Learning from the American economy... provided by tax cuts, and increased public (mainly on defence) spending, financed by a historically high deficit.

Lawson knows all this as well as anyone. Since the size of the American deficit is the point on which Reagan is domestically most vulnerable, it is inconceivable that he, or his advisers, would have gratuitously incurred such a deficit unless they felt - rightly in my view - that its benefits in terms of job generation outweighed its political disadvantages.

But if Lawson does understand this, he cannot possibly acknowledge it: for to do so would be to wreck what is left of his strategy. Instead, he seeks to explain away the American recovery by claiming that it is all to do with "supply side differences": that American unit-labour costs have been consistently lower than in Britain; that wages

did) to the rise in unemployment in Europe, and, above all, in the United States.

But the American economic scene has all changed. The economy has started to boom. For every 100 jobs in the United States in 1980, there are now 105. In Britain, the trend has been in exactly the opposite direction. For every 100 jobs in 1980, there are now only 95.

The unemployment rate in the US has dropped from 10.6 per cent to 7.5 per cent since 1982, while in Britain it has increased from 12.3 per cent to 13.1 per cent, and US inflation is, on the latest figures, now lower than in the UK - 4.1 per cent against 4.5 per cent.

The truth is that the Americans have, in large part, jettisoned their monetarist approach. Monetary policy was significantly eased in 1982. The recovery has been based upon a neo-Keynesian fiscal stimulus.

risers have been kept to a minimum and, above all, that the increase in jobs has occurred overwhelmingly in the areas and industries (like services) where the labour market is the "free-eat", and where unit-ization is the lowest.

It is true that American wage increases have been significantly less than in either the UK or the EEC. This has plainly helped the recovery, and has offset some of the effect of a rising dollar on the United States' competitiveness. But the trend of lower wage increases precludes the recovery, and productivity improvements have actually been less good in the US than in the UK. What really destroys Lawson's "supply side" excuses is that he is simply wrong about where the recovery in jobs has taken place.

The Monthly Labour Review of the US Bureau of Labor Statistics makes it clear that the states with the highest unemployment rates are

the largest recent decreases in unemployment were those which did the worst during the slump between 1979 and 1982. These states encompass the highly unionized, industrial heart of the nation. While 90 per cent of the jobs lost during the recession were in "goods producing industries" - "within the goods producing sector, manufacturing (has) regained about one half of the jobs it had lost". And while "service producing industries added more jobs to the economy over the year than goods producing industries, this sector grew at a slower rate".

America is a far larger and inherently more resilient economy. The large deficit has paradoxically led to a higher dollar. And, in the short term at least, expansion has unusually been combined with a drop in inflation. The US, with its vast home market, has far lower import propensities than do we. But all that said, Reagan, of all people, has proved that fiscal stimulus - Keynesian demand management - still works. When the British people finally find this out, their vengeance may be sweet indeed.

Jack Straw

The author is Labour MP for Blackburn.

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Charges of bias on Spanish staff tests

by Sarah Jane Evans

Accusations of unfair discrimination are beginning to fly in Spain's universities as a result of this summer's exams for non-tenured staff.

They were part of a reorganization of university teachers introduced under the new university law, the *Ley de Reforma Universitaria*. This was intended to change a situation in which nearly 80 per cent of Spain's university staff were on short-term, usually one-year, contracts.

Over the last 20 years, more and more staff have been taken on to cope with the enormous growth in this university sector. Few of them have passed the much criticized *oposiciones*, the public exams for promotion and the *oposiciones* passed too few staff each year to keep up with the boom in student numbers.

So this summer the first *pruebas de idoneidad*, tests of suitability for tenure, took place.

A first commission, made up of staff and students from the candidate's department, carried out secret investigations. The commission's assessment was then passed on to a second one, made up of five tenured staff drawn by lots and two appointed by the education ministry. They also considered a reference by the rector, a detailed *currículum vitae* and a portfolio of work. The candidate was not allowed to attend.

Of the 9,000 entrants, two thirds passed. But the list of those who failed contains some remarkable names. In Barcelona, the professor of botany, Ramon Masalles, failed, though his colleagues regard him as brilliant.

In another case, a commission member has declared that a candidate was failed because the other commission members did not like her. Encarnación Sanahuja, who fulfilled all the require-

ments in terms of teaching experience and publications and was away on a fellowship at Columbia University when the commission came to its decision, was found "unsuitable" personal, not professional reasons.

"She's a feminist, and she speaks her mind at meetings; the rest of the commission simply didn't like her." Stories of maladministration are only slowly coming to light, since many of the unsuitable candidates want to enter again and do not wish to jeopardize their applications. A number are also appealing against the decision.

In an interview with the magazine *Cambio 16*, the lawyer retained by Barcelona University to look into the cases of those who have been found "unsuitable", said he has serious doubts about the legitimacy of the proceedings. His criticisms centre on the fact that each commission had complete freedom of action in structuring the tests, which inevitably introduced an arbitrary element.

This would seem to be borne out by the figures from the ministry, which show that in psychology 30 per cent of the candidates were found suitable, while in economics and information sciences faculties 90 per cent passed. The tests were toughest in medicine, where a large number of long-standing senior staff lost their jobs.

While the criticisms multiply before the next round of tests, the ministry says it is pleased. Carmina Virgil, secretary of state for universities, said she expected to see an immediate improvement in the quality of teaching and research, as well as a general improvement in morale.

Her colleague in the ministry, Emilio Lamo, has, however, admitted that to have the tests was itself unsuitable, since it has led those who failed to feel publicly disgraced.

Rectors are blue about the Danube

A meeting between the rectors of universities along the Danube has urged that future academic cooperation programmes should pay special attention to environmental protection, according to Budapest Radio.

This is virtually the first time that the words "environmental protection" and "Danube" have been linked since the clampdown, last spring, on discussion of the Gabčíkovo-Nagymaros hydro-electric project.

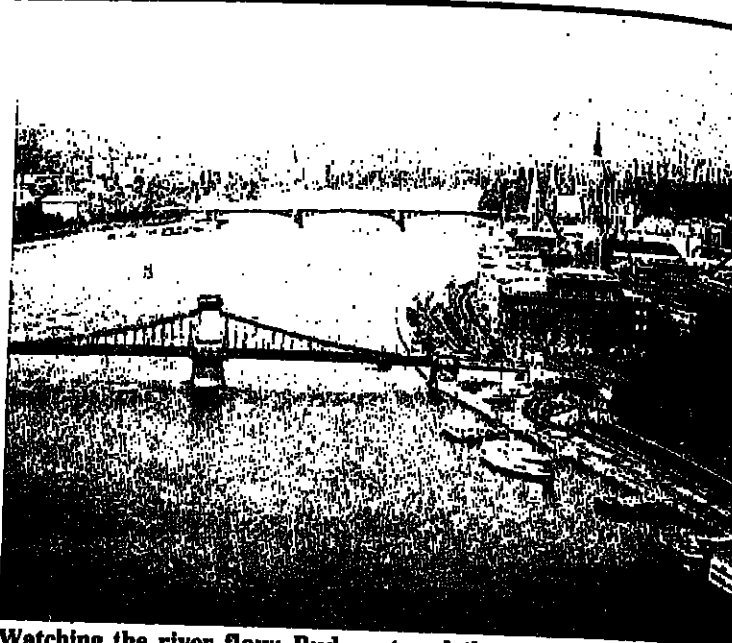
Many Hungarian environmentalists fear that this project could do irreparable harm to the water-table of Northern Hungary, extinguish much of the flora and fauna of a large stretch of the Danube, cause extensive flooding in the panoramic "Danube bend" - the main recreational area for Budapest - and even raise international political problems by diverting the flow of the river which marks the frontier between Hungary and Czechoslovakia.

A petition against the dam was signed earlier this year by a number of leading Hungarian scholars and environmentalists. Plans for the scheme, a joint undertaking between Czechoslovakia and Hungary, were drawn up between 1951 and 1963, when environmental issues were given relatively low priority. The contracts were signed in 1977 - still without a proper environmental assessment. Project evaluation studies commissioned by the Hungarian government were completed only after that country was committed to the scheme.

According to the petitioners - who include several scientists who worked on the evaluation studies - the scheme is not cost-effective. The dams are meant to top up power supplies at times of maximum demand, but peak demand comes in the winter when the Danube is at its lowest. Furthermore, they say, financial losses due to the flooding of valuable agricultural land and forests, and the pollution of subterranean waters which form the drinking water supply were not fully taken into account.

The petitioners asked the Hungarian government to stop construction, unilaterally if necessary, and to work out a scheme for improvement of the Danube reaches along the frontier, that would take "ecological, social and economic factors" into account.

The government privately showed some sympathy. Construction work on the Hungarian side stopped in 1981 ostensibly for lack of funds, and



Watching the river flow: Budapest and the Danube

earlier this year, the government managed to get the completion date rescheduled from 1990 to 1994. A formal withdrawal could have political consequences, since the Czechoslovak side is keenly pressing ahead with its own part, the diversion canal at Gabčíkovo.

Austria has now come into the affair. Plans for a similar peak-booster scheme at Hainburg in Austria have drawn more than 150,000 signatures in protest. News then reached the Hungarian protesters that the Austrian government was negotiating to shoulder part of the cost of the Hungarian undertaking in return for future supplies of electricity.

It now seems that as far as Hungary and Czechoslovakia are concerned the only people who can officially discuss the ecology of the Danube are university rectors.

Students want their university health service to stockpile "suicide pills" for use if nuclear war breaks out. But there appears to be little chance that the administration at Brown University, Providence, Rhode Island will take any action after a 1,044-687 referendum majority in favour of the move.

For weeks before the vote, a drive to put the referendum on the ballot in the regular student election among the 5,400 undergraduates was the focus of controversy involving students, staff, administrators, alumni and parents. Mr Howard Swearer, president of Brown said the university would not stockpile pills whatever the outcome. But referendum supporters, under the banner Students for Suicide Pills, claimed their drive was largely symbolic and designed to educate and raise the consciousness of students on the nuclear issue.

An editorial in Brown's student newspaper said "a strong yes vote on the suicide-pills referendum might rattle a lot of people's beliefs about college students. We do care about something beyond whether Mommy will let us have the car this year."

The university said interest in the referendum has sparked discussion among students and staff, and prompted calls from worried parents and alumni.

At a meeting before the vote, Ginna Templeton, a junior from Macon, Georgia, said the referendum was helping her to "face her nightmares about an atomic holocaust. 'I can't even think about tomorrow when I think that nuclear war is going to happen, she said."

Dr Sumner Hoffman, director of the university's health service, said a number of students had reported sleep difficulties and obsessive thoughts about nuclear holocaust since the referendum became a campus issue.

The potential for conflict within South Africa's black and ethnic homeland universities has been fully realized in a year which has witnessed violent clashes, extended boycotts and the inability of the government to control or meet student demands.

Set against a backdrop of school boycotts involving some 230,000 pupils and social unrest on a scale almost paralleling the 1976 riots, the black universities in South Africa's ethnic universities have been accorded secondary importance, or else have been viewed from a fragmented perspective.

But they are as much an indicator of the critical role which the education system, as an integral part of the social structure, is playing in the country today.

Professor Gerhard Totemeyer, political scientist and dean of the faculty of arts at the black homeland university of Transkei (Unitra) until his departure, earlier this year, states that "Education in South Africa has developed into a mechanism which not only divides blacks and whites, but also reinforces existing divisions."

While many a government in Africa hopes that education will contribute to political reconciliation

France creates 800 university jobs

from David Dickson

PARIS The French government has announced that it will create an additional 110 jobs for university technicians and support staff. At the same time, however, it intends to eliminate 105 administrative jobs and staff transferred to other work in the public sector.

According to M Roger-Gerard Schwartzberg, the newly-appointed secretary of state for universities, the government's promise to create the extra jobs reflects its conviction that the responsibilities imposed on universities by the new law remain a "major national priority" despite the current economic rigour.

Picking on M Fabius's earlier demands for the rapid modernization of the French economy soon after his appointment in June, M Schwartzberg said in a recent newspaper interview that universities were "a strategic place for modernization because they are strategic places for learning."

A similar philosophy was outlined by the new Minister of national education, M Jean-Pierre Chevènement, in his

first address on university policy, presented to the conference of university presidents in Paris.

M Chevènement emphasized his commitment to carrying out in terms of the higher education law which had been drawn up largely by his predecessor, M Alain Savary, and passed by the National Assembly in January.

In particular, he said that the law "conferred on higher education a freedom to adapt to the social and economic world."

At the same time Chevènement stressed that it was necessary to take steps to preserve the quality of university education, which should not be sacrificed in the interests of absorbing the greater number of students at which the law is aimed.

He defended "republican elitism" in higher education, which he defined as "a profound democratic requirement, since it gives everyone a chance to excel", and which he distinguished from the "reproduction of sixth elites" in the past.

In order to maintain equality of university teaching and research, Chevènement announced that he was setting up a national evaluation committee. This would be given considerable powers to examine the performance of different university institutions, to evaluate the results of their passed work, and to recommend measures to increase the efficiency of teaching, research and administration.

M Chevènement also told the university presidents that he wanted to encourage more competition between universities to attract the best students. This traditionally existed between the various advanced training schools in France, the *grandes écoles*.

As for students, he said he hoped to introduce various measures aimed at increasing the cultural activities available on university campuses and generally to make them more comfortable places to live. But he also wanted to increase the amount of support available from the government particularly for postgraduates.

Students demand death pills

from Deborah Kasouf

WASHINGTON Students want their university health service to stockpile "suicide pills" for use if nuclear war breaks out.

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Ovation for Mondale at Stanford

from Charlotte Beyers

PALO ALTO As United States presidential candidate Walter Mondale appeared on stage, crowd of 1,700 Stanford students roared: "We want Fritz," and waved their red and white pom-poms enthusiastically. The Stanford Marching Band burst into a wild rock rhythm while throughout the auditorium signs appeared saying: "Reagan doesn't read. Why does he want a library?"

Delighted by the crowd's response, Mondale asked: "Is this the Stanford campus where they are going to build the Reagan library? People will come from all over the world to see facts that you will never find anywhere else."

He continued: "This election is our future. The stakes are higher than jelly beans. This election is not about toxic waste dumps giving cancer to our children. This election is not about sending a teacher into space but about educating our children right here. The election is not about television makeup, but about students who need help to go onto graduate school."

The crowd roared with such joy that Mondale quipped: "Could I take you with me? I could use you."

Reagan may think he can recall

Suppose it's 2.30am and the president learned that Russian missiles are on the way. He must make a most important decision. We have a right to have a president who knows the facts. Former President Hoover said of Will Rogers, a famous actor and cowboy: 'It's not what he doesn't know that scares me, but what he knows for sure.'

"Reagan may think he can recall

Self-governing bodies of Polish students are "disintegrating the student milieu", the Minister of Science, Higher Education and Technology, Dr Bronislaw Mikulewicz, claims. They are creating new lines of division, and it is necessary to give serious thought to whether these bodies should not rather be formed "on the basis of existing student organizations".

The Minister's statement constitutes a threat to the gains won by students during the Solidarity period. Under the Lodz accords of February 1981, which settled a month long strike, the students won the right to an independent students union, the NZS, and "self government".

The existing Socialist Association of Polish Students (SZSP) was not abolished, but the majority of its members defected to the NZS. This meant that the new self-governing bodies took over many of the tasks normally performed by student unions (welfare, organization of holidays, etc), leaving the NZS and the greatly depleted SZSP a predominantly political role. This made it easy for the military authorities to abolish the NZS.

The SZSP failed to recapture the mass of students and during its November 1982 annual conference it disbanded and converted itself into a new, "non-political" organization, the Association of Polish Students (ZSP).

Most still preferred evolutionary change, but nearly 40 per cent indicated support for revolutionary change. Unlira students were also asked to indicate reference for different forms of protest action. While most (83 per cent) strongly approved peaceful demonstration as a form of protest, 33 per cent favoured the use of guns and explosives.

In a starting finding, 7 per cent of the students indicated they had already engaged in activities using guns and explosives.

Professor Totemeyer found that the 1976 student unrest in Soweto and other townships was still very much alive in the memory of today's students. "The courage and determination which scholars and students exemplified when they challenged the white regime made an impression. Student power had shown its muscles, irrespective of whether it was successful or not."

Political awareness and conscientization among the students at the five universities was very high, but simultaneously there was - at this



Mondale (left) and Senator Gary Hart faced a tumultuous reception

Becoming serious, he said: "Suppose it's 2.30am and the president learned that Russian missiles are on the way. He must make a most important decision. We have a right to have a president who knows the facts. Former President Hoover said of Will Rogers, a famous actor and cowboy: 'It's not what he doesn't know that scares me, but what he knows for sure.'

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Turks launch protest

from Bernard Kennedy

ANKARA

Thousands of Turkish university students faced with the danger of expulsion on grounds of academic failure, are conspiring for changes in the exam system.

It is the first organized student action of any sort since the military coup of 1980, and has aroused considerable sympathy in the press and among members of parliament. It looks like becoming a test of strength for the Higher Education Council - the body appointed by the generals when still in power to oversee the running of all the nation's universities.

The campaign sidesteps meetings and demonstrations which are banned under martial law, and has concentrated on thousands of individual petitions to the council, university rectors, and parliament. The aim is to ensure the adoption of a private member's bill providing for the right to re-take certain examinations.

The bill's sponsor, Mr Mehmet Ozdemir, a member of the ruling Motherland Party, argues that the measure has been made necessary by the council's constant chopping and changing of examination regulations over the last three years.

Some students are now taking up to 120 examinations in a single academic year, he claims, thanks to the obligation of making up one by one all those previously failed. As it is, most students in Turkey have to take a series of qualifying exams in each course studied to qualify for end-of-year tests. They must then pass all of these if they are to proceed to their next year of study. A single failure anywhere along the line can bring with it the obligation to repeat a whole year of study. Even though Mr Ozdemir's proposals could mean still more time in the examination hall, students have latched onto them as a chance to escape from the constant threat of failure.

The Higher Education Council is opposing the move. Following a recent meeting held under the chairmanship of education minister M. Vehbi Dinçerler, it said that changes in the examination regulations would result in a lowering of standards. The council has been supported in this by the rectors of all four Ankara universities.

Professor Yuksek Bozer of Hacettepe University was even more outspoken: "If you're going to give students the right constantly to re-sit exams, you might as well not have exams at all."

The final decision will be taken by parliament after the proposal has been studied by the relevant committees. Much clearly depends on the stance of the Motherland Party, so far unable to take a clear position on the issue.

Prime Minister Turgut Ozal's private consultations with council president, Professor İhsan Doğramacı, do not bode well for the future of the bill. However, the students' campaign of petitions is keeping the issue very much alive.

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He sounds a warning though, that the likelihood of unconventional forms of protest, especially violent actions, will increase when conventional forms become considered as inadequate, ineffective and restrictive on the achievement of legitimate social, political and economic aspirations.

The recent constitutional endeavours by the South African government have evoked severe protest in the black population who are increasingly demanding a say in decisionmaking at local and central government levels.

In the long term, the response of these demands and changes effected by the government will have a higher political socialization impact on black students than the educational process.

Developments in South Africa, says Totemeyer, are "fast passing the stage where the Gandhian philosophy of peaceful resistance could still be of assistance to avoid open conflict."

Carolyn Dempster

'Open University' flourishes

from Lindsay Wright

WELLINGTON

New Zealand's "Open University" is celebrating its twentieth anniversary this year with record and rising enrolments.

Massey University's Centre for University Extramural Studies was originally established in 1960 as a branch of Victoria University of Wellington. Its teaching programme started with 500 students, mainly teachers, in five first-year subjects.

Second-year studies began in 1963 and the following year enrolments had risen to 918 students. By 1970, more than 2,000 students were enrolled in 28 courses.

Today nearly 10,400 extramural students are on 350 separate courses. By sitting the same examinations as Massey's 6,000 internal students, they complete their degrees knowing that their qualifications match those of any other New Zealand university graduate.

Enrolments in extramural studies this year are the equivalent of 2,740 full-time students.

Teachers in 1970 made up 56 per cent of enrolments, but now represent only 24 per cent. The four other largest occupational groups are people in private employment (23 per cent; 1970, 5 per cent); civil servants (17 per cent; 1970, 10 per cent); people at home (14 per cent; 1970, 13 per cent); and nurses (14 per cent; 1970, 1 per cent).

Shut down after student lecture boycott

from Carolyn Dempster

JOHANNESBURG

The university of Zululand (Ngoyo) has been closed for the remainder of the academic year because of the disruptive effect of a student boycott over the past two months.

In a statement issued by the university authorities last week, they said the lecture boycott made it impossible to complete essential work in the time left available.

Trouble began at the small Zululand University in August, following the

sporadic boycott of lectures over the quality of the food in the university canteen.

Representations to the rector were unsuccessful and students' tempers rose, as did tension on campus. By the end of August, when lectures resumed after a brief closure, the police had adopted a presence in and around the university. On August 31, police dispersed students who attempted to hold a meeting in the university chapel and on September 1 students staged another mass boycott in protest against the

expulsion of 11 students. Four days later police in camouflage dress arrived on campus at 2am and launched a raid on the male hostels. Women found sleeping in the male hostels were arrested and fined while 15 other male students were detained under the internal security act.

The university authorities advised the students by pamphlet that lectures would be suspended until further notice and that week the university was closed and students advised to apply for readmission to the second semester in August next year.

Supporters of the early retirement

plan view the potential turnover as an opportunity for new appointments which they feel will rejuvenate academic departments, and point to the increased opportunity for the state and city university systems to hire more women and members of minority groups.

But several college administrators have warned that the sudden loss of a large number of experienced professors could have a devastating effect on some campuses.

According to opponents, the incentive plan could include as many as 30 per cent of the senior faculty members at some of the four-year colleges in both the city and state university systems. At Hunter College alone, according to Donna Shalala, the president, 119 of the 243 full professors on the staff are eligible to retire next year.

Opponents also claim that the mass departure of a large number of experienced departmental secretaries, campus facilities managers, electricians and carpenters could also be a severe blow to colleges in both university systems.

Administrators at Fairleigh Dickinson University, a private university in New Jersey, have also offered an early retirement incentive to tenured academics, but unlike the New York State plan, departing faculty members would not be replaced.

The administration has offered to "buy out" tenured staff with a lump-sum payment of double salary and fringe benefits. Academics would receive a payment equal to two years' salary and would continue to receive fringe benefits over a two-year period.

Koreans face spying charge

Four second-generation Korean residents of Japan, who "penetrated South Korea disguised as students", face charges of spying for North Korea. According to the South Korean defence security command, the four set up one-man espionage rings.

Two of the four are further charged with helping to organize the demonstration which they subsequently reported. All were enrolled at different universities and colleges, and there is so far no suggestion that they had any contact with each other.

Dr Franklin, who was first low at Plak, and at Harvard, Dr Franklin turned to the American South, believing that a working historian needed to be close to the source of his research - "and in the middle of the depression, it was impossible for me to think of travelling to Great Britain".

He has written several acclaimed books on the American South and Afro-Americans, including *From Slavery to Freedom: A History of Negro Americans*, which is required reading in many black history courses.

Dr Franklin has also been active in the US civil rights movement, and a member of the research team whose work led to the Supreme Court's 1954 decision to outlaw racial segregation in schools.

I.G. figures out the LSE

New director I. G. Patel will adopt a different approach to that of Ralf Dahrendorf, writes Ngaio Crequer

PROFILE

I.G. Patel quelled his first student rebellion at the age of 24. His mediation was so successful the students asked him to serve as their principal. So he stood in for a short time before carrying on with his economist career. These days at the LSE where he has just taken over as director, such experience is not as valuable as it once would have been. Nevertheless, for Ralf Dahrendorf, the LSE's first director, known as I. G. the incident at Baroda College, Bombay is an early example of a gift of being able to reconcile opposing factions.

He will need outstanding gifts, to follow Professor Ralf Dahrendorf, the scholar and politician whose style and authority did much to shape the LSE's distinctive edge.

In manner and approach he is very different. He is softly-spoken, relaxed, amiable without being gregarious. He is interested in detail and, not surprisingly, has a great facility for figures. Unlike Dahrendorf he is not an academic, and only his last job, as director of the Indian Institute of Management, in Ahmedabad, which he started in 1982, and a brief spell as a professor and college principal in 1949/50 qualify him in that direction.

Instead, he is an internationally known economist with a distinguished public service in India, culminating in governorship of the Reserve Bank of India. He has served as finance adviser to his government and also held key positions at the International Monetary Fund and the United Nations.

He was born in 1924 in Sunav, Gujarat State, India. His father, who never finished high school, was a clerk for the local railway. His mother, who had ten children, received most of her education at home, from her grand-

father. It was she, who had been deprived a formal schooling, who most had a feeling for education and its benefits.

"I had a really happy childhood. We never felt deprived but we were a family struggling to maintain middle class decent aspirations," he said.

He was the eldest son of seven brothers and three girls and the family's aspirations centred round him. He was a good student, he says, but did not really know it until he matriculated. Some 48,000 people took the examination and he came second to top.

"The bug had bitten. I was expected to do well and this stayed with me," he said. He studied economics at Baroda College, University of Bombay, from 1940 to 1944 and graduated with a first class honours degree.

He wanted to study in Britain and King's College, Cambridge offered him a place. He went to Thomas Cook's and asked if there was a ship. "Don't you realize there is a war on? There are no ships," he was told.

He was staying in a hostel in Bombay doing postgraduate work, and suddenly Cook's contacted him. There was a ship coming from China. It had been converted to civilian use for British missionaries. There was room for another eight or nine people and would arrive within the week.

He went back to Baroda and saw the state prime minister. Within two days he had a scholarship and a passport. His family was worried about whether he should go to England in wartime but they said: "We can take the world's blame if we are wrong, but not your blame."

The LSE had been evacuated to Cambridge. He attended lectures by

Friedrich von Hayek, Nicholas Kaldor and other LSE staff. He learned from Townes, Laski and sat in on Lionel Robbins. He then got a fellowship to Harvard, and returned to Cambridge in 1949 to do his PhD. He won the Adam Smith prize.

Then he returned to Baroda - a condition of his first grant - where a new university had been built. At 24 he was offered a full professorship and head of the department of economics. This was when he also acted as principal.

Then I.G. was invited to join the research department of the International Monetary Fund in Washington. The IMF had then been going for only a few years and they were looking for people of calibre from the developing world. Baroda released him from his five year contract.

While there he wrote, with E.M. Bernstein, his key work, *Inflation in Relation to Economic Development*, which examined the distortional effects of inflation on developing economies.

It was at this period he realised that however good his training had been, he was still a stranger to the IMF and balance sheets. He was invited to join an IMF mission to India and in 1954 was offered the job of deputy economic adviser, in the ministry of finance (the equivalent of our Treasury) to the Indian Government.

"I had never thought of government. I had always thought of myself as a teacher, that was what I wanted. But I found I liked it."

His main job was liaising with the Planning Commission and the Indian Statistical Institute, Calcutta, and he became directly involved in the Second Five-Year Plan.



I. G. Patel: no stranger to budgets and balance sheets

In 1958 he married a professional singer in Indian classical music and decided he wanted to go back to teaching. Instead he went back to the IMF as Alternate Executive Director for India.

He went back to India in 1961 to become chief economic adviser at the Ministry of Finance, where he dealt with the devaluation crisis, and tried to get outside bodies to help India.

In 1967, he reached the apogee of his career, at 42 the youngest secretary to the Department of Economic Affairs at the Finance Ministry. His youth, and the fact that he had not come from the civil service caused some resentment, but he was welcomed by those who knew him.

It was a very active period, with crises abounding, and difficult personalities to deal with. For a year Mrs Ghandi assumed personal charge of the financial portfolio.

"There was the split in the Congress Party in 1969. Her nearest rival was Desai. It was being said about her that she was becoming stronger but she did not understand finance, a topic great importance to India."

She was determined to prove she could do it and took the portfolio herself. She worked like a schoolgirl, asking for longer and longer briefs. Twice a week three or four of us would go through with her the questions to Parliament. She was very hard-working and mastered the subject quickly.

Then in 1972 he went to New York, to be deputy administrator of the United Nations Development Programme, which gave him much broader experience of other countries and taught him that developing countries needed technical assistance far more than finance or other aid.

Then Desai offered him governorship of the Reserve Bank of India, which he kept when Mrs Ghandi was returned to office. Finally, in 1982 at 58, "a retiring age in India" he secured at least a semi-academic job, as director of the management institute.

One day he had a letter from How Wheldon, chairman of the LSE court of governors, a man he had not met. More than 500 names for the directorship had been sifted to single figures.

I am not asking you if you are interested, the letter said, but if you are going to be in London, could we meet? Patel was about to go to Barbados to meet Wheldon and some of his colleagues at an airport hotel.

A little later he was told he was on the shortlist and asked if he could meet some more of Wheldon's colleagues. This time he was on his way to Washington, but made a detour to the school, to have lunch. The next day he walked into his Washington hotel room, and the phone rang. The selection committee would like to recommend him for the job to court.

As an economist Patel does not neatly fit any labels. His PhD was on trade and development, but in his professional work he has mainly been involved in fiscal and monetary policy, the balance of payments and development economics.

"A Central Bank governor is something of a monetarist but at the same time I could never believe in the mechanical application of monetarism... It is more like an index."

"I am more and more impressed by the importance of social phenomena and political processes in producing consensus. Economic relationships are not given by God."

He is reluctant to be specific about any plans for the LSE. "A director is more a means than an end. The real objectives are those of the students and teachers. A director's task is to facilitate these aims, to be a bridge."

"My advantages are that I have no ambitions to do other than well at the school, and having to sit between different groups is something, in a different context, I have been doing all my life," he said.

John O'Leary

Medicine heals itself

Jon Turney on how the MRC has juggled its budget to cope with its funding crisis

They've been working overtime on the arithmetic this summer at the Medical Research Council. And whichever way you do the sums 1985/86 looks like being the most difficult year in recent memory for the Research Council which most of Britain's medical scientists depend on for funds.

The Treasury's version of "level funding" for science hit the council hard this year, but things got worse from now on. Staff at the headquarters in Park Crescent, London - a few yards from the University Grants Committee - face the task of revising old procedures so they can still fund new work on a gradually declining budget. And the council's secretary Sir James Gowans will preside over big changes in the way decisions are taken in medical research in his second five-year term of office, recently agreed with the Department of Education and Science.

The MRC's current problems first came to light last spring, when the vital recurrent budget for council research units - used for laboratory supplies - were suddenly cut by 16 per cent for the coming year, or just over £2m. Amid the howls of indignation from laboratory directors who said there was no point paying for scientific staff if they could not do any experiments it became clear the council's finances were under enormous pressure.

The pressure began with the allocation of the MRC's share of the DES science vote, £117.2m for 1984/85 but still a cut in real terms. Then, as Sir James recounts, "during the year we had an unprecedented series of bills to pay before we could start spending any money on science". The largest of these turned out to stem from the pay award to junior university lecturers. The MRC pays researchers in its units at the same rate, and the eventual extra cost reached £1.1m, up from earlier estimates of a few hundred thousand pounds.

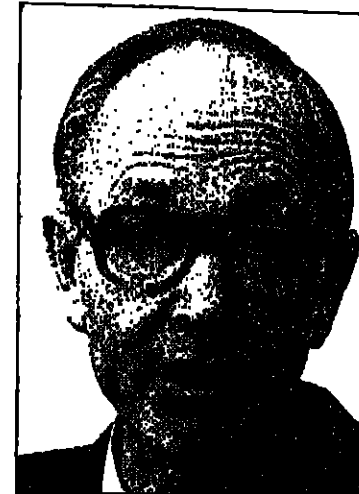
This came on top of other, smaller losses: £600,000 for increased pension payments, another £300,000 for interest on subscription increases, £300,000 for lost income through technical "rounding down" in the DES unit cap at £2,000,000 to make good fire damage at the Dunn Nutrition Unit in Cambridge.

The result was a research council not only bereft of the crucial marginal money needed to support new work but rapidly running out of money to meet its existing commitments. Even though the instant cuts were imposed on the MRC-funded units, university grants also suffered this year from the general cash shortage. "By July we had an absolutely draconian cut-off point for grants to units," Sir James said. Around half of the grants rated at only one-third of the rates granted at the highest level by review committees still had to be turned down and those awarded were pruned as much as possible. "We ended the year on a dismal note," he said.

The prospects for the succeeding year, officially starting in April 1985 but taking in grants awarded from this year, were bleaker. The Advisory Board for the Research Councils wanted to find money to help with restructuring in the hard-pressed Agriculture and Food and Natural Environment Research Councils. With the science vote unlikely to increase this has to come from the MRC and Science and Engineering Research Council budgets. The restructuring levy will cost the MRC £0.9m in 1985/86 and £1.8m in 1986/87.

The MRC was so concerned it took its case outside the ABRC and went to see Sir Keith Joseph, Secretary of State for Education and Science in July. The council's chairman Lord Jellicoe, and Sir James were received sympathetically, but told there was no money. The DES would make a bid for an increase in the science vote in this autumn's public expenditure round, but the Treasury position was likely to be even stricter this year than last.

Going right to the top, a meeting with the prime minister in August, produced the same result. The government understood the council's problems, but had an overriding priority to cut public spending. Sir James said this was not for the MRC to decide, but he insists that ministers must understand the consequences.



Sir James: balancing act



Lord Jellicoe: sympathy



Dr Nicholson: attended meeting



Mr Clarke: got the message

He thinks the meeting with Mrs Thatcher, also attended by Sir Keith, health minister Mr Kenneth Clarke and the Cabinet Office chief scientist Dr Robin Nicholson, at least got the MRC message across.

This was important partly to satisfy the council's staff, who were inclined to make the campaign more public. Taking to the streets is not the MRC's style, but the political mileage in media reports being stopped is clear from the future over refusal of continued funding to a university group studying "cot deaths" earlier this year. However, it would be uncharacteristic to see such considerations influenced Mrs Thatcher.

So the council's planning for next year must assume current budget projections will not be improved. Present spending levels would mean a deficit of £1.8m in the coming year, rising to £4m in 1986/87 when the restructuring levy really begins to bite. But the council is

also determined to restore at least some of the money taken from units. Its philosophy has always been that good researchers must have enough money to do the best possible work. The council meeting which set the financial framework for the next year agreed to find £1.2m to restore to the unit budgets, just over half the money lost last year. But this will have to come from the spending on university grants.

Balancing the books for 1985/86 will mean lopping 25 per cent off five-year programme grants approved next year, 7.5 per cent off three-year project grants and 30 per cent awards for research studentships and advanced courses studentships. There will also be restrictions on building and capital equipment, and the council will have to find a partner to pay a share of a proposed new building in Oxford to house a new centre for applications of molecular biology to medicine.

But this can only be a short-term arrangement. In the end, the only way of making sure that the researchers the council chooses to support are properly funded will be to reduce the number of units. This will mean new review procedures for individual units and closures for some - though MRC has never had a redundancy agreement with the unions because staff from units have always been redeployed in the past after closures.

Sir James is reluctant to go into detail on how the new strategy will evolve: "the council has a year to develop selectivity, to look at all the mechanisms we have at the moment for review of what we're supporting, and the structure of the boards and their relationship with council". But he stresses that the new measures will only carry conviction with university researchers if the council is seen to look very closely at unit spending. At the same time, unit directors will want closer scrutiny of university grants.

However, while it is clear there will be reductions on both sides, Sir James does not see the consequences of cuts in units and universities as symmetrical. There is a difference, he argues, between a full-time researcher in an MRC unit who is suddenly cut-off in the middle of a long-term programme of work and a university lecturer concerned with teaching and other matters who is told there is no money for research which he or she neglects.

When it comes to choosing between units, there is little indication what principles of selection will apply beyond Sir James's insistence the council must build on its strengths. He is wary of proposals for a grand strategy or suggestions about moving out of whole areas of medical research. Medicine is different from other areas, he argues, because the burden of sickness falls across all specialities, so there is always a demand for doctors for new work. And while there's no point in funding work in areas where there are no good ideas or good people, that doesn't make it any easier to choose which kinds of research to stop doing in the fields where good work is possible.

He also scorns what he calls the "why don't you leave it to the clever Americans scenario". Many fields move so rapidly that a country without a scientific presence of its own can soon no longer understand or apply new work. Sir James has experienced this personally in immunology: "I can read the immunological literature now and understand it, but I've no way of knowing whether it's right or not".

Even so, it is hard to see how the MRC can avoid moving more toward organized strategy, as the other research councils are doing in response to similar cash shortages. There is already selectivity in the distribution of the cuts between units, and this will happen again next year. The very best will get a little more money.

The council has never revealed the full details of the way units were treated last year, on the grounds that league tables are bad for morale. But it is known that two of the larger establishments, the National Institute for Medical Research and the Cambridge Laboratory for Molecular Biology, fared slightly better than the rest.

So far, unit directors have generally declined to give details as well, but they may not be so discreet next time round. As well as selling an overall plan to university and unit researchers, Sir James will also have to try and prevent the larger issues becoming obscured by a scramble for the last few thousands of the money which is available.



Norman Mailer: no longer the enfant terrible but not yet the elder statesman of American letters

The tough barometer of American life

Never - never ever, they say - take the character's words for the author's.

Yet as the character Tim Madden says in Norman Mailer's latest novel *Tough Guys Don't Dance*: "I am so compromised by so many acts that I must try to write my way out of the internal prison of my nerves, my guilts and my deep-rooted spiritual debts."

These words might usefully stand as a memorial to his past career than a signpost to his remaining commitment to write fiction.

"Compromise" seems an odd word for Norman Mailer. Propelled into sudden literary fame with *The Naked and the Dead* in 1948, perhaps the best book to emerge from the war, he fully embraced the dictum that wisdom comes from excess, not moderation. In the 1950s he became the prophet of a tough non-Marxist "instinctual radicalism", typified by the mythical figure of his essay "The White Negro". The piece, later anthologized in *Advertisements for Myself*, first appeared in *Dissent*, the radical journal Mailer helped set up (later he was to be one of three founders of the *Village Voice*).

Dissent, against every liberal norm and literary expectation, was to be Mailer's byword throughout his career. His work skirted obscenity and political irresponsibility, became the basis (via Kate Millet's) almost entirely literary *Sexual Politics* of the feminist polemic.

He twice ran as mayor of New York - his first campaign aborted rather abruptly on the evening of the launch party when he attacked his wife, painter Adele Morales, with a penknife. Since then, there has been Mailer the boxer (Queensbury rules with his pal Jose Torres, street rules on television with Gore Vidal and in innumerable semi-legendary encounters); Mailer the journalist, covering the Pentagon march, the moon-shot, New York graffiti; Mailer as Marilyn Monroe's fantasy lover.

More recent controversies surrounded his long study of the executed murderer Gary Gilmore, *The Executioner's Song*, which some saw as a "celebration" of wanton violence. That charge took a new edge after Mailer, petitioning won parole for Jack Henry Abbott - author of a series of letters to Mailer, published as *In the Belly of the Beast* about Gilmore, prisons and death. Within days, Abbott stabbed to death an innocent waiter and Mailer found himself at the centre of another row.

Such has been his barometric sensitivity to American life that his work has underlined the often-repeated conviction that life copies art, not vice versa. Mailer's output is dotted with "non-fiction novels", "fictional biographies" (of Marilyn), "the novel as history" (a novel). Mailer has found himself in a curiously cleft stick. The "reality" of journalism has less literary credence than the novel, yet for all Mailer's obsessive concern with the novel as a form, he preferred to stick to subjects that were outwardly journalistic. In 23 books, he has only written seven novels, though at least four more, Mailer claims, are novels despite their subject matter. The most

common non-ideological criticism is that he has squandered his talent on small, compromised projects, written for money - for alimony, to finance three disastrous films, to pay off taxes - rather than on the serious business of literary creation. It may be that Mailer himself feels some of the sting and the justice of the charge.

Committed to Bellevue for psychiatric reports after the attack on Morales, Mailer pleaded for release and a clean bill of mental health on the grounds that his work would suffer from any imputation of insanity. Mailer has been obsessively concerned with the reception of his work through the years.

In 1979, he pre-reviewed his own *Of Women and Elegance* from the point of view of his feminist antagonists. He has theorized endlessly about his work and his critical acclaim. His third novel, *The Deer Park*, was prefaced with a plea culled from Gide: "Please don't understand me too quickly". The same words re-appear in *Tough Guys Don't Dance*. Mailer is painfully aware of the stereotypes snap judgment.

Mailer was in London last week to publicize the new book. At 60, he's no longer the enfant terrible but not yet the elder statesman of American letters. The novel is just as deliberately aimed at wrong-footing the reviewers. Its predecessor, the massive chronicle of pharaonic Egypt *Ancient Evenings*, took over a decade to write. *Tough Guys Don't Dance* was done in 61 days, a self-imposed deadline of the sort he used with *An American Dream* in 1963 - a method, incidentally, hallowed by Dickens, who wrote for serial publication, month to month. The title suggests an element of put-on. A writer who habitually produces evocative even lyrical, titles *Barbary Shore*, *The American Dream*, *Of a Fire on the Moon* - has deliberately gone for something redolent of pulp.

The plot, violent, macabre and perversely sexual, sits closer to Chandler or Hammett but the book is written in a heavy, roundabout style more like James, Thomas Mann or Proust, laden with negatives, double negatives, strange ellipses. Again, it probes the night-side of the American mind, Mailer's obsession with death, sickness, homosexuality. *Anna*, Tim Madden, a blocked writer deserted by his wife, awakens with a headache, an erection, a fresh tattoo on his arm, and blood on the front seat of his car. What follows, and the extravagantly synthetic resolution of the plot, will doubtless infuriate more than his feminist critics. But it is quite wrong to see the novel either as a grubby bid for more alimony cash or even an outmoded dive into the pseudo-existentialist wallow that appeared between American detective fiction and the Sartre school. If there is an element of put-on, it is more of a challenge than joke. Mailer is too ambitious and intelligent a writer for self-parody. *Tough Guys Don't Dance* is a remarkable performance. Please do not understand it too quickly.

Brian Morton

Tough Guys Don't Dance is published by Michael Joseph at £8.95.

From the White House to the jousting field

Among the small, select band of foreigners in charge of British higher education institutions, the man with whom Dr Patel probably has most in common is to be found in sharply contrasting surroundings in deepest Devon. Like Dr Patel, he went straight to the top of a highly individual college without having lived in Britain before and with little experience of higher education. His qualifications, too, rested largely on his work with international agencies.

But there the personal similarity ends, for Mr Curtis Roosevelt's background could hardly be more different. Indeed, since he was born and partly brought up in the White House, his earliest years chronicled in the American overseas representative. It was only royalty, whose background is not different, Dartington College of Arts is a world away but there he has found attractions and challenges which more than justify his apparently unlikely move from a long and successful career with the United Nations.

The main attraction will be obvious to anyone who has made even the briefest visit to the college and seen its glorious setting. Mr Roosevelt delights in the historic Dartington Hall, complete with its jousting field and spectacular, terraced gardens overlooked by a Henry Moore sculpture. Talking relaxedly on a summer's day, strolling the grounds, it seems hardly necessary to ask why he wanted the principalship. However, there was more to the move than a change of scenery and there is certainly more to the job than a country seat.

Mr Roosevelt was the first to admit that he would be an unusual appointment when he contacted his predecessor, Mr Peter Cox, to apply for the post. He had never been to Dartington and was not a well-known figure either in higher education or the arts; he had merely seen an advertisement in New York and felt capable of doing the job well.

"I didn't know Dartington was anything like this, but I did know I was being sent to the United Nations," he says with characteristic candour. He had spent more than 18 years at the UN, mostly as head of non-governmental organizations, dealing with areas such as maritime organizations and relations between the churches. It was too long in one place, he felt, and,



Dartington Hall: more to the job than a change of scenery

as a man in his mid-50s, there was no time to lose in changing direction. Mr Roosevelt was placed on a shortlist of eight, which included a senior member of Her Majesty's Inspectorate, the head of a university fine arts department and a British Council overseas representative. It was only then that he discovered a strong family link with Dartington through the friendship of his grandmother, Eleanor Roosevelt, who founded the school and the remaining activities on their former estate.

A full week of interviews with everyone from the trust to the county staff, students, an external assessor and a representative of the Council for National Academic Awards soon ensured that both sides knew what they would be letting themselves in for. At the end of the week he was offered and accepted the post, taking over after a three-month "running-in" period working in tandem with Mr Cox, who is still a governor.

It took rather longer to get fully acquainted with the English system of public sector higher education, however. Indeed, he devoted most of his first year as principal to that task: (to the annoyance of some of his staff.) It would now appear to have been time well spent since Dartington is one of the colleges which still features in the National Advisory Body's review of art and design. The college's future is to be re-examined in the light of the CNA's comments on Dartington's fine art Dip HE course.

But Mr Roosevelt does not feel

threatened, in spite of a feeling that the Government undervalues art and colleges. His confidence is based not only on the quality of the staff and students, but also on the level of support Dartington receives from the Devon authority. There has been one overall assessment of the college in its time as principal, in the form of an institutional review by the CNA, and that was successful, as well as having the incidental effect of showing him more of the strengths and weaknesses in provision.

As an expert in the evaluation of institutions, born of his role at the UN which included making assessments of the organization's own units, he was more impressed with a CNA review of Dartington's music degree. He accepts the need for monitoring services such as libraries, which would fall outside the remit of the council's subject boards, but doubts that institutional reviews are sufficiently sharply focused. "No two people will mean the same thing by a suitable environment for study," he says. "Does it just mean that the place smells right? Can tell that in 10 minutes?"

Nevertheless, the peer review system - and the CNA in particular - is the feature of the British higher education system which Mr Roosevelt admires most. He is more critical of the dip HE, while acknowledging that it has a difficult balance to maintain. He would like to see more fundamental debates on the needs of particular subject areas and less reliance on formula solutions.

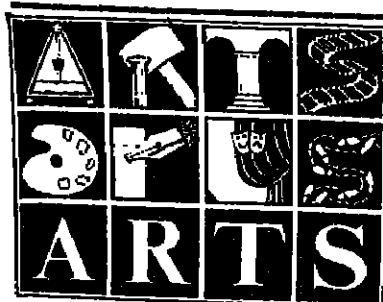
In particular, he is critical of the

growing fashion for larger institutions, which threatens Dartington's future. "Any management consultant will tell you that the theory of small units being inherently inefficient went out years ago. It simply has been disproved," he claims. "Small units can be efficient or inefficient, just as large ones can." He insists that this is not a *post hoc* rationalization since he fought a losing battle at the UN for smaller units.

With only three full-time degree level courses (including the Dip HE, grade), some 300 students and 32 staff, Dartington is certainly small but Mr Roosevelt considers it anything but inefficient. He jokingly claims to have beaten the high-tech institutions to the first paperless administration, since the vast majority of communication between his three-strong administrative and the academic staff is verbal. Unit costs are high only because of the subjects offered, he says.

Mr Roosevelt realises that he has a fight on his hands, however, in spite of the acknowledged strengths of the college as an unorthodox centre for the arts. He has already had to contend with the fallout of last year's scandal at Dartington School, whose only connection with the college is through the Trust. Any fears of boredom or insularity are long past. "I was absolutely beat at the end of the first year," he says. He expects to see out the remaining 12 years of his contract and retire in Devon.

John O'Leary



ARTS

Events

Concerts:

Tomorrow, Great Hall, Goldsmiths' College, London. NCOs Orchestra with John Harle (saxophone) in a programme of Dvorák, Glazunov, Smetana and Martin.

Tomorrow, Sheffield Cathedral. Haydn: The Creation.

October 30, Turner Sims Concert Hall, University of Southampton, London. Furietano Trio with Jan Schlapp (viola) in a programme of Mozart.

October 31, Arts Centre, University of Warwick, City of Birmingham Symphony Orchestra and Chorus. Panufnik's Sinfonia Sacra and Beethoven's Symphony No 9.

November 1, University of Lancaster. Halle Orchestra with Norma Fisher (piano), conducted by Denis McCaldin. Mendelssohn, Greig, Brahms.

November 2, University of Manchester. Lindsay String Quartet: Haydn, Ravel, Webern, Mozart.

November 2 and 3, University of Nottingham. Allegri String Quartet in residence. Evening concerts, plus an open rehearsal of Beethoven's Quartet in C, Opus 29 on November 3 at 3pm.

November 4, Barnfield Theatre, University of Exeter. Bochmann String Quartet: Mozart, Britten, Dvorák.

November 7, Royal Northern College of Music. Early Music Series concert by Sequenza. Music of the twelfth and thirteenth centuries. Sequenza appear at the University of Durham on November 10.

November 8, De Montfort Hall, University of Leicester. Leicester Symphony Orchestra and Leicester University Choral Society in a programme of Beethoven.

November 8, Lincath, University of Newcastle. Stephen Reay (bassoon) and Alan Fearon (piano): Saint-Saëns and Tchaikovsky.

November 10, Morley College, London. Afternoon concert party, beginning at 4.30pm. Includes concert of Beethoven from Gary Karr (double bass) and Harman Lewis (piano), and introductory talks.

November 18, University of Aberdeen. University Choral Society: programme includes Mozart's Requiem Mass in D Minor.

Other events:

Until November 3, Contact Theatre, University of Manchester. Joan Littlewood's *Oh! What a Lovely War!*

Until November 3, All Saints Church, Newcastle. *The Newcastle Literary Festival*. Includes appearances by David Lodge, Maureen Duffy and Graham Swift (October 27); Alasdair Gray and Bernard Mac Laverty (October 29); and Melvyn Bragg, Angela Carter and Marilyn Amis (November 2).

Tomorrow, Whitworth Gallery, University of Manchester. Day school on William Morris's medievalism, in association with the current exhibition, *William Morris and the Middle Ages*.

October 29 to 31, Nuffield Theatre, University of Lancaster. Hull Truck Theatre in John Godber's play *Up 'n' Under*.

October 30, ICA, London. Seminar discussion: "Reviewing Film Policy", with Mamoun Hassan, former managing director of the NFFC and Brian Weir, director of programmes at BBC television.

October 30 to November 3, Arts Centre, University of Warwick. Cambridge Theatre Company in Noel Coward's early play *The Vortex*.

November 2 and 3, University of Essex. Treble Theatre Company in *Plastered!*.

November 2 and 3, Clive Wickham Theatre, University of Bristol. *The Yellow Wallpaper*: adaptation of a Victorian feminist novel by Charlotte Perkins Gilman.

November 4 to 18, University of Surrey. Festival of Russian and Soviet Culture. Lectures and performances on Soviet cinema, art, music, ballet, poetry, theatre.

November 8 and 9, Leeds Polytechnic. Appeal Products present *The Gaslight Factory*, a melodrama for the new Victoria.

November 16, Wolverhampton Polytechnic. National Theatre present *Orwell's England*, directed by Michael Bogdanov.

November 20 and 24, University of Durham. Premiere of Jon Silkin's first play *Gurney*, directed by Steve Dearden.

Constructing the frieze of life

Edvard Munch is now known almost exclusively outside Scandinavia as a painter of inward states: sickness, madness, sexual anxiety. Yet, as with Henrik Ibsen - Munch made the set designs for a Max Reinhardt production of *Gladius* - the "expressionist" tag is insufficient.

Just as Ibsen balanced his concern for states of consciousness with a subtle grasp (amazingly so given the constraints of his medium) of the social pressures coming to bear beyond his domestic interiors, so Munch was concerned with a far larger, more totalizing vision than seems to be embodied in the best-known canvases. Works like *"The Sick Child"*, *"Puberty"*, *"The Kiss"* were produced in the 1890s, touched by that decade's flavour of decadence. *"The Scream"*, easily his best known work, was published just before Christmas 1895 in the Parisian *Revue Blanche*. It is easy to forget, given that weighting toward the beginning of his career that Munch lived and worked through two world wars; he died in 1944.

He himself chose not to consider his works as individual experiments. They belonged together, he believed, as part of a single continuous work he knew as *The Frieze of Life* and which was to be an examination of the human condition in all its forms. As his career developed he came to believe more and more in a public art and to conceive his work as part and parcel of specific environments.

In Berlin and Paris, he had begun to paint industrial scenes. Munch was not a socialist in a strict ideological sense; Scandinavian socialism was filtered, via Georg Brandes, through Nietzsche and remained far more individual than its continental counterparts. After his disastrous breakdown of 1908, Munch began more and more to think in terms of an art that both celebrated and belonged to working people. His identification with them stemmed largely from his own isolation from a hostile bourgeois art public in Oslo and elsewhere, and from his own obsessive concern with the physical and technical activity of art. Few modern artists can

have spent more energy working and re-working specific themes and images and individual canvases; many of Munch's most characteristic works appear in several different forms, as he explored the relationship of techniques to theme; even an early canvas like *"The Sick Child"* was re-worked obsessively. Its surface criss-crossed with scratches and touchings, the paint worked deep into the surface. His careful examination and re-examination of the possibilities of various print-making techniques - intaglio, planography and relief - demonstrated his enormous care as an artist. Even the most violently "expressionist" subjects, like *"Vampire"*, emerged only after the closest examination of the available media.

The current exhibition at Newcastle Polytechnic (soon to tour) features over 100 works from the latter half of Munch's career, none of them previously seen in Britain. Few artists, certainly none identified with Expressionist concerns, have had such a clear and programmatic sense of the shape their entire product should take and this show offers an ideal opportunity to see Munch in the kind of ordered bulk of the large-scale projects of his later years, for the Oslo University Festival Hall and the Freia Chocolate Factory, remained unfinished or were not installed; yet they are among his most important work.

The critic Jørgen Nilsen wrote of *"Workers Returning Home"* that it appeared to reflect the spirit of the Bolshevik Revolution of the previous year. This is fanciful. Munch would hardly have approved of Lenin or his party. He was a radical, but of a somewhat sentimental sort and he showed little outward interest in political ideas. "Any washwoman knows more about it than I do," suggests as much diffidence as populism.

For Munch, the artist was one of the workers. His one abiding conviction (perhaps no more than an inversion of bourgeois values) was of the centrality of work, the need to see art as instinct with all other varieties of work and to



"Munch and the Workers" is on show at the Newcastle upon Tyne Polytechnic Gallery until November 30. From January 1985, it will tour, visiting Aberdeen, Edinburgh, Belfast, Liverpool and London.

Brian Morton

Living traditions

The very portals of the Royal Academy of Dramatic Art are literally steeped in tradition. The front doors open on to staircases emblazoned with lists of prize-winning past students - the first Bancroft Gold Medal was awarded in 1905 - and busts of George Bernard Shaw by Rodin and Epstein and a Socratic portrait of Dame Edith Evans loom over the lobby.

You turn sharp left away from all that to enter the Principal's office. The Gower Street traffic rushing past the window seems a more appropriate earthen backdrop for the rather rugged, broad-shouldered presence of Oliver Neville who's just starting his first full term in charge. He exudes energy and is candidly pragmatic about RAD's traditions. "One wants to strengthen the traditional disciplines but also to prepare students for the realities of the acting world where to earn a living nowadays you have to be ready to operate right across the board. I think we must pass on the alive bits of the tradition and at the same time enable students to open out to every possible experience of what's happening now."

What's happening right now at RAD as students assemble for the new term is some radical refurbishing of one of their theatres - the Rodin and the Epstein are trembling at the thump of sledge-hammers and there's brick dust in the air. Under Neville's personal supervision the proscenium arch has been ripped out of the smaller of the academy's two auditoria, the GBS, which is being remodelled into a flexible studio space. A scenic kit of rostra and screens and built-in lighting and technical course more scope to experimental productions.

This integration of the artistic and the technical has been a lifelong concern of Neville's. "I read *On the Art of the Theatre* in my teens and took to it like a duck to water. I saw that the sign of a good actor was the actor who was able to combine the technical and the artistic. So I've managed to combine the technical and the artistic. I've seen that the sign of a good actor was the actor who was able to combine the technical and the artistic. I've seen that the sign of a good actor was the actor who was able to combine the technical and the artistic."

Ed Thomason

stage and walking on at the Rep. In the early fifties he worked as an actor before deciding that he wanted to be a director. Again somewhat in the Gordon Craig manner he did this by switching to stage-management first but advanced rapidly to become Associate Director of The Old Vic - "What I really wanted was to run a theatre with a genuine community identity and luckily The Library Theatre in Manchester were looking for an artistic director so I went there and then after that to Ipswich." Then came another change of emphasis. In 1969 Neville decided to read English at Kings College, Cambridge. "A marvellous opportunity to recharge the batteries and actually to read up on all the historical grounding of one's principal work in the theatre - but always with the specific objective of the degree which was a necessary focus, a real purpose." That same sense of purpose led him on after graduating to a doctorate at Bedford College, London, and then to Bristol University in 1979 as senior lecturer in drama.

University life has neither diminished his commitment to the stage nor tempted him to polemicize about it. He is refreshingly undogmatic - "It's a moral question really, as it is in every other aspect of life, how do you balance the ideal with the commercial reality - say of being an actor? And of course, as in life, there's no one answer, no one method. When I auditioned as a student actor I look for a spark, a potential, whatever it might be, that something of their own which he or she is having to express. My kind of directing is opening up actors rather than dumping pre-conceptions on them." And now this "planned" career - this blend of the theatrical and the academic - has converged on our foremost drama school. "Yes, I knew immediately when it came up that I wanted to do it. I was in a curious way what one had been preparing for all along. Of course the traditions must be preserved but we must re-inform them with what's new for today. We have to enable students to make their own choices, to take what they can from here and fold it back in, to make a new theatre."

Ed Thomason

The natural habitat for green politics

Timothy O'Riordan writes about the fourth environmental revolution

The season of party conferences has just ended. The Brighton tragedy and the continuing miners' strike tended to obscure all other issues, though the economy, the future of the welfare state, the role of the nationalized industries. Media attention was naturally captured by immediate events and tended to pass over more deeply rooted party political positions.

"Green issues" get little prominence. They are still very much Cinderella topics - though the Conservative conference this year featured a first-ever session on the environment - normally confined to the early morning when minds are not at their sharpest. Nevertheless, the acid deposition problem and the protection of the countryside are now topics of considerable public interest and the parties are obliged to prepare a position.

The problem for the green movement is to persuade party activists, political commentators, the media and the public that "greenness" embraces all the high profile issues. It cannot be confined to a few green-edged pigeons and two column inches of reporting.

The time is ripe for green politics to capture the party manifestos. But there is a peculiar practical difficulty facing Britain's Ecology Party. Given traditional voting allegiances and especially the iniquities of the present electoral system, the Ecology Party stands no chance of obtaining power. Yet most of its proposals, while superficially naive and impractical, actually contain the blueprint for the Britain of the future. So the problem for the Ecology Party is how to play its cards. Should it struggle on alone, and hope to capture recognition by a growing band of sympathisers as problems of economics and resources create strains and stresses that demonstrate its arguments? Or should it deliberately feed its ideas into the programmes of the four established parties, and move green politics to the centre of the political stage?

Environmentalism is currently struggling on substance but weak on philosophy, effective over specific issues, but unable to coordinate its adherents into a creatively political force. It strikes sympathetic chords but appears too unrealistic and visionary. Its immediate task is to show the connections between particular concerns - notably acid deposition, the safe and cost-effective operation of nuclear power, the acceptable movement and disposal of radioactive and other toxic materials, the guaranteed protection of nationally important habitats and landscapes, the use of energy and materials more efficiently and durably - and wider policies pertaining to the economy, unemployment, social welfare and third world debt.

Its greatest challenge is to establish a fundamentally different way of thinking about the use and management of nature and material resources, the plight of the underprivileged, and especially the interconnections between environmental deprivation and social and economic distress, the rights of future generations, and a social ethic based on sustainable growth. We are entering the fourth environmental revolution. The first period of environmental consciousness began 150 years ago at the dawn of the romantic age. The mood was captured by poets and writers in many guises, notably Wordsworth, Chelkoff, Emerson, Thoreau and Muir. They saw in the natural world an allegory of how human society ought to live. They passionately believed that the woods, the trees and the mountains had a life of their own, every bit as important as that found in human consciousness. These powerful ideas appeared just when the natural world was being sounded over by the industrial revolution and the rise of the modern industrial city.

The pattern of economic growth and the rise of the modern industrial city were profoundly influencing attitudes to the environment and its extension, to social morality. In the hands of John Ruskin, William Morris and others, the natural world was being sounded over by the industrial revolution and the rise of the modern industrial city.

Another example is the Wildlife and Countryside Act. The centre piece of the countryside protection part of this statute is the voluntary management agreement. This creates a contract between the landowner and the state over the management of land and water in the "public interest". The trouble is that these agreements are based on fundamentally unsound principles. Payment is related to the loss of "profit" from agricultural and forestry practices that are usually environmentally unsupportable. That payment comes from the hard-pressed conservation purse and the money can be used to invest in activity that is equally damaging to the environment elsewhere. It is morally wrong for precious conservation payments to be so abused. It is also morally wrong that stewardship of the land becomes a matter for the pocket book rather than the conscience. Formalism and legalism may result in public control over environmentally aberrant practices, but this is no way to proceed. Environmentalism is about self-reliance, inner awareness and public spiritedness. Responsibility should come from within and cannot be externally imposed.

The new environmentalism of the emerging fourth revolution poses a challenge of an altogether different order. The rosy glow of the 1970s is over. Fudging, compromise and avoidance are no longer satisfactory ways out. The time is ripe for marrying nineteenth century philosophy with early twentieth century pragmatism and mid-twentieth century political lobbying and institution building.



at the turn of the nineteenth century, there was "a growing conflict between the growing sensibilities and the material foundation" of human society. A mixture of compromise and concealment has so far prevented this conflict from having to be fully resolved. But the issue cannot be completely evaded and can be relied upon to recur".

Time was gained in the early twentieth century by advances in the scientific understanding of resource management. This was the era of the environmental technocrat who sought to manipulate environmental processes and increase economic wealth. Sustainable yield forestry, soil conservation, irrigation of the great deserts and the emergence of applied ecology are all associated with this period. While the romanticists sought to place nature on a par with man, the managers aimed at intervention and alteration of landscapes for the good of man. In this, they created an approach to resource exploitation that was longed for by major public and private corporate interests. Environmental regulation and resource extraction worked hand in hand.

The third environmental revolution emerged in the mid-1960s, a period of rapid economic growth and ubiquitous communication. Environmental concerns captured global media attention. Oil spills, deforestation, the plight of endangered species, toxic chemicals in food, soil and water alerted the public to the dangers of trusting the technocrats. This was a period of institution building, sweeping environmental regulation and the rise of scientifically respectable, politically articulate, litigious pressure groups. There was much frenetic activity during this time but we should be cautious about its achievements. The environmental idea became formalised, confined to particular agencies and policy compartments, an "add on" to business as usual. Almost every human activity became regulated by cumbersome rules of precedent and consultation.

Two examples suffice to illustrate this problem. The regulation of toxic chemicals is becoming a minefield of scientific dispute and litigation, as various interests struggle to influence the regulatory process. Scientific argument is spilling over into the non-scientific public sphere where emotion and prejudice - not uncommon in scientific circles - are more openly taking over. Politicians caught in the middle become confused and uncertain, but are pushed on by articulate pressure groups to take action before all the relevant evidence is available. This leapfrogging of scientific advice is especially pertinent to acid deposition and the regulation and disposal of radioactive wastes.

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the richer world, pollution control costs and inefficient resource investment are contributing to economic decline and labour losses. Paradoxically recession or stagnation appear to make it easier for regulators to regulate and for politicians to agree to lumpy short-term investments, which would result in considerable future savings.

The "new" environmentalism is all about changing the agenda. There is a link between jobs and sustainable growth, a role for partnerships between the public and private sectors in industrial, urban and environmental rehabilitation, a massive opportunity to integrate the so-called "informal" or "domestic" economy with the more conventional tax economy. This will require a realignment of departmental budgets and much greater interdepartmental coordination.

Pollution control, social investment, regional development and environmental rehabilitation are inextricably linked. There will be a slow but progressive shift towards more community-centred action with funds and initiatives focused on the local level. The potential for absorbing the enthusiasm and visions of today's youngsters is enormous, but policies should be directed and purposeful. Just as each of the previous three environmental revolutions were born out of a concern over abrupt changes in economic conditions and public mores, so the current mood is being shaped by economic and scientific uncertainty and the realization that a radically different approach to the concepts of economy, community, work and leisure is there for the taking.

How are the political parties likely to react to all this? I have already suggested that the Ecology Party is taking a conceptual lead. Its manifesto chart many of the right paths but the arguments lack weight and authority. The party must not despair - it is the only one that should be pleased to see its best ideas poached by opponents. The more it provides good copy on the merits and application of sustainable growth, and on the connection between activity and collective economic and social reliance, the more it will be transfusing the bloodstream of British politics.

The new environmentalism is not, however, the prerogative of any one political party. The potential danger is for the centre and left parties to attempt to capture greenness for their own and isolate the Tories. This would be a grave error for environmentalism should be a cross-party concern. Its strength lies in the different interpretations the various parties choose to emphasise. Indeed, the very diversity of interests that espouse environmentalism attributes to its universal appeal and its political durability. Non-partisan political pressure on selected problem areas can be extraordinarily influential. An excellent example is the rapidly moving shift of alignments in the agriculture-conservation debate.

What is more likely is the adoption of greenness by the four major parties. The SDP has already taken on board

the main proposals of the UK Conservation and Development Programme launched by the Prince of Wales in June 1983. In a speech to a special conference on November 26, 1983 Dr. David Owen advocated a policy of "green growth", recognising the interdependence of economic and ecological priorities, and advocating an economic revitalisation programme worth £2,000m which would also benefit the environment. The Liberals have long courted environmental positions and are renowned for their faith in community politics. Last year they endorsed a programme of sustainable growth and are prepared to accept a zero growth economy.

Centre parties would be expected to make the most of the new environmentalism, and maybe they will gain a toehold on power. The parties struggling most with these new ideas are Labour and the Tories. Labour is now anxious to "weave the green of environment into the red of socialism". The problem for Labour is to marry the idealism and radicalism of the green movement with the inherent conservatism and centrism of organised labour. The new environmentalism does not fit well with socialism, state control and public funding. Its political sympathisers urge it to search for a more decentralised orientation. In *The Guardian* on June 11, Raymond Williams argued for the replacement of "the ideal of production by the idea of livelihood. To be practical... a new kind of audit of our actual resources within distinct political regions is required." He argued for a "range of possible policies based on resources rather than a plan which is a simple addition of existing enterprises or an unselective investment programme". These are important new ideas for the Labour party, but it is difficult to see how the centrist and labour orientations of socialism and the decentralised self-reliance perspective of the new environmentalism will successfully merge.

The Conservatives have a golden opportunity to capture part of the new environmentalism. Sadly, they show little signs of doing so. The Tories tend to equate greenness with leftness. The clue may lie in an emerging realisation that unemployment will not go away and that millions of talented youngsters cannot be allowed to grow old without being of value to themselves or the nation. The Tory party should welcome the partnership idea and spawn a whole series of initiatives to rehabilitate the countryside and derelict industrial areas, and to revitalise community enterprise.

The task of the new environmentalism is to promote this thinking, to show all the parties that they share a lot of common ground, so that in their various ways they can incorporate greenness into all aspects of their manifestos for the next general election.

The author is professor of environmental sciences at the University of East Anglia. This is an amended and shortened version of a lecture delivered to the British Association in September.

Ernest Boyer



Measure for measure of university performance

An observer of colleges and universities in the United States might conclude that higher education there is more than adequately assessed.

The federal and state governments have detailed procedures to monitor programmes they fund. Six regional accrediting bodies, blanketing the nation, measure the overall health of higher learning institutions. One hundred and fifty-four professional accrediting bodies look at specialized programmes on campuses — ranging from agriculture to nursing education. And many states have what are called coordinating bodies that try to keep collegiate programmes well-balanced.

Consider California: the Western Association of Schools and Colleges, the regional accrediting organization, is responsible for institution-wide evaluation. In addition, there is the state coordinating board — the California Post-secondary Education Commission that reviews new programmes and evaluates selected degree programmes already in place.

Beyond these oversight arrangements, administrators at the three public higher education systems in California (the University of California, California State University, and the community colleges) have at their disposal a variety of student, teacher, and administrator evaluation procedures of a very complicated and exhaustive sort.

One example: in 1983, the trustees of the California State University system voted to evaluate the job performance of the system's 19 campuses, and to do so every five years. The board also decided to evaluate the performance of the chancellor, albeit on a different schedule.

All of these evaluations are generated beyond the individual campus. But of course, each campus also has its own special provisions for assessment. Faculty evaluate their colleagues at tenure time and students, too, have formal and informal ways of evaluating classes.

The situation in California is, with variations, repeated in most states across the country.

Still, after all of this, we remain dissatisfied. The pieces do not add up to a coherent whole. Reports of low test scores among teacher education students, nursing graduates who fail to pass state licensing exams, the necessity for remedial programmes, these and other "failures" have encouraged a move for externally imposed student performance tests.

At least two states (Florida and Georgia) now require students to pass exams of basic skills and general education to advance to the junior level. And, in 1983, the Southern Association of Schools and Colleges considered requiring member institutions to measure student outcomes as part of the accreditation process. That decision, after objections by some members, was deferred pending further study.

To measure or not to measure? And, if so — what — and how? These questions beset educators and policymakers alike. The debate is heating up and the answers differ widely, differ to the point of contradiction.

On one side there are academics and especially politicians who insist that education is now big business and better ways must be found to evaluate the effectiveness of the investment. Grady Bogue, chancellor of Louisiana State University, put the issue squarely: "To know as much about our students on exit as we know about them on entry hardly seems an extraordinary expectation... how can we possibly give any meaningful lead-

ership to programme and service improvement without data on what our graduates know and think?"

Implicit in such comments is the suspicion that higher education is unable or unwilling to monitor its behaviour. Chester Finn, director of the Center for Education and Human Development Policy at Vanderbilt University, has written: "Accountability is unpleasant — comparisons are unwelcome — objective indicators reveal embarrassing truths. And so the academy, even more than the public schools, has actively resisted the development of measure of student learning, of institutional productivity, of faculty performance, and of scholarly quality... We have essentially no means of gauging how well American higher education as a whole is doing with respect to student learning."

On the other side of the debate are educators, most often faculty members, who see grave dangers in trying to quantify a process as significant and subtle as the education of students. They point out that it is the least important parts of the experience that are measured — time, space, numbers of students and faculty, and the number of books placed on the shelf.

Beyond the nuts and bolts there are, these people argue, qualitative effects that are infinitely more important but infinitely more difficult to assess. Kenneth Ashworth asks: "How effectively can we measure... the ability to think critically, self-esteem, independence, increased tolerance, empathy, intensified sensitivity, more sophisticated tastes, the rejection of stereotypes or the capacity to grow in each of these qualities?"

The challenge of accountability is both sobering and disturbing. And yet there remains a restlessness among politicians, the public and students about the process and the outcomes of higher education. Educators, while worrying about the dangers of slicing college into little pieces to be counted, must continue to search for ways to evaluate their work.

Otherwise, major decisions will be taken out of the hands of those people within the university who probably know most about what goes on there and have the capacity to see the larger picture. As administrative and academic evaluation is conducted increasingly by those beyond the campus, governance structures will erode and the integrity of the campus will be threatened.

This problem already has emerged. In addition to the persistent oversight of government agencies and the granting of specialized accreditation, college guidebooks have in recent years become a booming business. Parents and students, dissatisfied with accreditation and unwilling to accept unchallenged the colleges' slick promotional brochures, are turning to commercial reports that describe campuses in colourful and irreverent terms.

What higher education needs today is not additional yardsticks to evaluate its work. More than enough procedures are in place. Needed now is more attention to the meaning of the enterprise, for only as we gain greater clarity about the functions that the forms are to serve will we have the standards by which to measure our procedures. Only as we clarify goals of higher education will we have the confidence to proceed with our evaluations.

Who's afraid of fresh air?



The Second Chance course at Southampton offers women a chance to change their lives

Jane Thompson asks why men don't like feminist education

Women, in Virginia Woolf's now famous observation, "have served all these centuries as looking-glasses, possessing the magic and delicious power of reflecting the figure of man at twice its natural size". Part of women's vocation, it seems, has been to provide staid confirmation of men's significance and worth.

It's what we're trained for in our socialization, that which the education system, with its historic insistence on domestic education for working-class girls and feminine accomplishments for their wealthier sisters, has done little to contradict. Even the pioneering demands of middle-class women in the nineteenth century to be allowed to receive the same educational opportunities as men, brought them not into touch with the cultural, social and intellectual knowledge of women — despite their concentration in girls' schools and women's colleges — but rather an initiation into the knowledge that was then considered to be significant.

It was, of course, men's education, reflecting the knowledge and values which men in consultation with each other historically had managed to pass off as "the best that had been thought and said" in a human context. Women's new opportunity to learn was in many respects the opportunity to learn more about men.

The development of state education and the sluggish recruitment of women into higher education has brought little progress. At all levels the social, cultural and intellectual knowledge of women remains firmly in abeyance. Those who do well in the education system do so in appreciation of the knowledge and values which the men who created and still control education have decreed to be important.

The only exception to all of this is the painstaking development of women's studies courses in higher education and more especially in adult education.

In October 1983 more than 60 women joined the Second Chance for Women course organized by the department of adult education, Southampton University. Their course lasts one day a week throughout the calendar year and is now in its fifth year of operation. It has built up a popular local reputation as a course which is for women, about women and concerned to assist women in their attempts to gain greater independence and a strong sense of their own worth. Women going on the course are mostly without formal qualifications, have received least from the education system in the past and are looking for a popular local reputation as a course which is for women, about women and concerned to assist women in their attempts to gain greater independence and a strong sense of their own worth.

The resources for the course are minimal — operating as we do at the margins of an already impoverished provision. The 120 hours of course time is infinitesimal in comparison with the widespread discrimination against women which each one of us

confronts daily as a way of life. Second Chance, in offering women the equivalent of five full days in a lifetime to change their world, might be more accurately re-titled "No Chance". And yet, against all the odds, the experience of being on Second Chance does seem, almost without exception, to have enormous repercussions.

Each year women grow in confidence and critical awareness. They find approval for themselves and give generously to each other. Their strengths are recognized and they discover ways of shifting what often seem to be impossible lives. For those for whom the weight of society's oppression is too enormous and too unfair — there is at least the beginnings of an understanding that the fault is not their own: the understanding that all of us have to develop if we are to take collective action against the enormity of men's control over our lives.

The numbers of men who give unqualified support each year to the women on Second Chance could be counted on the fingers of one hand. For those women in relationships with men — merely coming each week, let alone participating in discussion, reading and essay writing, represents an amazing courage.

In the early stages, "enlightened men" usually approve — "a new interest", "a little hobby", "something to make women more interesting companions". As women become more interested in the course, their men's approval rapidly evaporates. The course is ridiculed, trivialized and attacked, and invariably becomes the subject of countless arguments about "proper femininity", "duty" and "biology". Men's sexual and emotional demands become more intense during women's participation in the course, some women are physically prevented from attending, and books and notes have, on more than one occasion, been destroyed.

It's a well known fact that most mature students reentering education, with a spouse or lover left at home, experience some degree of disharmony and re-adjustment in their personal relationships, but the extent to which a pro-woman course like Second Chance gets interpreted in men's minds as anti-men, and men feel challenged, recommitting and retributive, seems out of all proportion.

Undue concern about Second Chance is also a reaction of those in authority who are reluctant to relinquish their control over women's education. A flourishing recruitment and strong evidence of enthusiastic women are participating in adult education for the first time in their lives — seems not to be evidence enough of the course's success.

Publications by students, radio and television programmes, spectacular achievements of past students — and their will to continue despite often considerable personal opposition — is somewhat suspected. Curriculum con-

tent which focuses principally upon women is considered to be "high risk" and "politically controversial". Teaching methods which encourage inquiry and activity, the value of personal knowledge and consciousness raising, and cooperative learning as distinct from competitive elitism are dismissed as "unacademic".

Because the course does not give equal weight to the concerns and scholarship of men, it is judged to be illiberal, and because the students are women as distinct from men, they are assumed to be gullible. I have no doubt that courses relating to trade union and working-class politics and black studies would also be objectionable in many ways to those defenders of the liberal tradition in adult education who have chosen to forget the origins of adult education in working-class politics. But I suspect that trade union and black studies students would not be considered susceptible to indoctrination in quite the same way a women seem to be.

Of course undue pressure brought to bear on those who cross the lines which men have drawn in education is not new. We know that women striving to enter higher education and the professions in the nineteenth century were treated in a most hostile and unchivalrous manner by their fellow students and teachers.

We know that the great achievements of working-class women in campaigns for trade union rights, the vote and women's rights were not without personal cost and have been almost totally ignored by male historians.

We know that the Cooperative Women's Guild — which provided political, social and economic education for women and campaigned on issues directly related to securing women's rights — had their funds cut off by the cooperative Union for recommending changes in divorce legislation. We know that in contemporary America, influenced by the New Right — feminist and lesbian teachers have been sacked and that resources for women's studies courses have been drastically reduced. And in our own work, the price of survival seems increasingly to be at the expense of feminist approaches.

At both a personal and institutional level, then, resistance is growing. Why, as soon as women begin to feel better about themselves, more explicit and more outspoken in their own defence, do men begin to feel threatened? And why are men so reluctant to let women create their own knowledge and to become their own teachers? Is male power so tenuous an oppression that such a little breath of fresh air could blow it all away?

The author is a lecturer in adult education at Southampton University. Her new book *Learning. Liberation. Women's Response to Men's Education* has recently been published by Croom Helm (price £8.95).

Marcia Pointon argues that history of art should be taught in a totally different way

An image of art for society's sake

Twenty years ago, anyone making a case for history of art within the university curriculum would have based their argument in all likelihood on the coherence of the humanities and the need for a visual and aesthetic education in a civilized society. Sir Kenneth Clark's television series *Civilization* epitomized this approach and was itself probably the major factor in the increase in applications to read history of art in the late 1960s. The debate would have centred upon the issue of whether art history was more appropriate to graduate than to undergraduate studies and whether classics or history was the proper preparation for an art historian.

Today the discussion takes place within an arena characterized by three major and partially conflicting problematics. The first of these is Government cuts in the higher education sector and particularly the demands of the University Grants Committee and the National Advisory Body which effectively require institutions to state priorities within assumed economic patterns of resource and demand.

The second problematic concerns the changing parameters of the discipline, as a result first of the impact of theoretical debates within other related disciplines and second of the rapid development of film studies, design history, media studies and so on. These developments represent within the institutional structure the widening gap between state-supported art and radical or popular forms of culture.

The third problematic is related to the changing power structure within the discipline and the changing class profile of teachers and students. Connected with this is the reduction in employment opportunities for graduates in all disciplines.

Art history is no longer exclusively or even mainly male, upper class, middle-aged and conservative, let alone Tory. There have been many more women students than men for a long time and in the teaching profession the ratio of women to men is now less unfavourable than in other humanities disciplines, bearing in mind that only 18 per cent of university teachers overall are women. It would seem ludicrously narrow today even to suggest that one answer to the question "what do we refer to when we use the word art history?" might be "what is done and taught at the Courtauld Institute".

In terms of daily teaching (and I refer to universities though most of what I say must apply equally to the BA history of art and design degrees in the polytechnics) this combination of partially conflicting factors affects us in a number of different ways. It generates excitement at the prospect of change and the challenge of solving problems but there is also frustration and confusion.

To take the first problematic, the question of the cuts. Even if it were possible for day-to-day teaching in universities to continue unaffected by debates about the economy, it would be wrong to allow this to happen. It is unrealistic to expect us to spend a morning trying to answer a series of questions posed by the University Grants Committee and based on assumptions that are inappropriate, tedious and damaging in the long term, assumptions that education is a commodity that can be regulated like the flow of foreign cars on to the market, and then to spend the afternoon discussing with students a series of essays on art in Florence under the Medici as though there were no connexion between these two activities.

State intervention in the arts and cultural imperialism in its broadest sense have to be understood historically. In this instance, the particular nature of government interference in the university curriculum amounts to, among other things, effectively a form of state intervention in the arts. It is irresponsible not to encourage students within the teaching situation to make connexions between the history they study and the politics of their own day.

Art, its production and its consumption, has always been a political issue. It is therefore wrong to suppose that what has already been done to the Arts Council, what is presently being done to the Greater London Council, the universities and polytechnics, what it is threatened will be done to the Serpentine Gallery in London, and what is being done to the museums and galleries administered by metropolitan boroughs, has no connexion with Florence and the Medici. Our ability to make a meaningful historical analysis depends upon our awareness of the power conflicts of the present as well as those of the past.

Art history is a many faceted discipline. And I am happy to use the name discipline (however unfashionable it may be to do so) even if only because it has become dissociated from its equation with wealth ownership and developed as a profession peopled by individuals who have to work for their living.

So art history is polymathic and we have recognized its debt to philosophy, all branches of historical analysis, literature, archaeology and other disciplines. What used to be perceived as a weakness (it was difficult to accommodate art history into a departmental system and it tended to get annexed by history or film art) should now be acknowledged as a source of strength on political and academic grounds.

The notion of "usefulness" in relation to many subjects taught and researched in universities is a spurious one. The health of a nation, in every sense of the word, depends upon the exercise and development overall of its collective intellect and imagination as well as upon the practical application of learning and expertise in specialized areas. Development and the capacity to change in the national as well as in the personal sense depends upon self-criticism and this is fostered primarily by the so-called "non-vocational" arts subjects.

If we do consider art history within the definitions of those in power we see a lamentable, indeed, culpable ignorance of the theoretical and applicative relationship that is the basis of some disciplines deemed non-vocational. History of art is taught in universities in this country as both a theoretical and a practical subject. It perhaps bears the same, often for the left uncomfortable, relationship to capitalist production as film studies in the sense that the "pure" academic objects of the discipline effectively privilege certain forms and genres and have, therefore, the capacity to affect the market.

Conservation, museum curating, exhibition and arts organization and dealing are all functions of international business and tourism. Britain's tourist industry and its status as the centre of the world art market derives from the standards of scholarship that are independently developed and safeguarded within the institutions of higher education which present government policies are destroying. Moreover, however much we move away from object-based art history in universities there will always be an implicit link with the practical aspects of artistic production.

Ironically we are seeing currently a wave of pride in the achievement of British design. New and effective industrial and commercial design does not just appear: it is nurtured in an art history conscious community. Devising time in a seminar on Courbet to discussion of the state of affairs in higher education and the arts is not a misuse of taxpayer's money and academic privilege. Any higher educational process in which those being taught are unable to justify their education is not worth much. There has been no massive revolt in a university art history department comparable to that which occurred in the Cambridge English department over the issue of Colin MacCabe and film studies. That revolt rumbles on.

The kind of upheaval should not, however, be cause for complacency. The arguments have gone on, viciously in book reviews in the pages of the *Times Literary Supplement*, in polemical pieces in magazines like *Black and Screen* and in confrontations at confer-

Actually, I'm more into drawing flowers... but you'd never get a grant for that.



ences and symposia.

One result of historical development (partially an accident of chronology and resources) that led to a concentration of conventional art history devoted to architecture, painting and sculpture (a triad that goes back to Vasari) in universities and to the development of design history, film studies and the analysis of visual mass media predominantly in polytechnics has been to explain the controversy about what art history should be as a conflict between universities and polytechnics. This is not the case. There are plenty of conventional "developments of western art" courses being taught in polytechnics, using texts like E. H. Gombrich and H. W. Janson, and there are universities where feminism and art history, film and photography and methodology, as course material, are all on the syllabus.

Nevertheless, it is generally true to say that art historians in universities have greeted with bemused antipathy those changes through which, in English studies in particular, theory has become the central area of debate. I refer here to the intervention of linguistic theory through Althusser, Barthes and Derrida, to the anthropological and historical models established for example by Michel Foucault, the sociological theories of scholars like Janet Wolff and to psychoanalytic theories extended into the cultural zone by Lacan and other post-Freudian writers.

The fact that many theoreticians foreground representation and that all are concerned in one way or another with communication as a two-way process presents a gigantic challenge as well as a great opportunity to art historians. But old ways die hard and most art historians went into their profession because they got pleasure from looking and have never been encouraged to consider the methodological bases of their procedures. It is not, therefore, surprising that it is being left to students to drag their teachers screaming into the 1980s.

In the old days of art history teachers in universities would have expected, or grudgingly tolerated, interdisciplinary debates. This provided data for the study of subject matter, that is iconography and common empirical concerns such as the study of non-western culture or specific projects like eighteenth century patronage. The resources of slide libraries have regularly been made available on this basis. But the historicity of current methods from structuralism to psychoanalysis has sent teachers and students in search of visual material who never before set foot inside the slide library with its foot inside the slide library with its foot inside the slide library with its foot inside the slide library.

This incursion has left art historians feeling threatened and breathless with indignation. But students of history of art make friends with students in other disciplines, they do courses in other departments, they attend lectures on new topics in the evening instead of settling down with the *Burlington Magazine*. True to the best educational traditions it is students who set the pace and demand that their teachers keep up with them.

Art history as a discipline has long

been in need of a more rigorous theoretical base. Indeed it is precisely the lack of theory both in the sense of a "scheme of ideas which explains practice" in the sense of a hypothesis in opposition to practice that has often resulted in the status of art history as a discipline being brought into question. The empirical and archaeological aspect of the discipline with its strong tradition of attribution studies, that is connoisseurship, is necessary but it has played a dominant and oppressive role and, for the rest, description and personal impression has often taken the place of serious analysis.

Although it is true that these challenges within art history come at a time when we have to meet them, as it were, with our hands tied behind our backs (our library acquisitions are restricted and our research and reading time seriously eroded) it would be foolish to fall back on this as an excuse.

So how do we tackle this in the classroom? The syllabus cannot be updated by substituting one set of artists for another, one period for another, though some would willingly do this, focusing a course for example around whichever artist or group are currently in vogue. This you shift the emphasis from Delacroix (a monarchist) to Courbet (a "man of the people") and you substitute Italian futurism for English Bloomsbury.

On the other hand students have only limited time at university, if they spend it all reading theoretical texts they will be losing touch with the empirical base of the discipline. The developments of the past decade in British humanities (they go back much further on the continent) demand a complete reappraisal of the material of art history and how we should teach it.

At the same time, the vocational requirements of the discipline outlined earlier demand that we train students who, on graduation, are familiar with major world art movements as popularly defined and are capable of distinguishing between, say, a Titian and a Tintoretto. If we don't teach them this they are disadvantaged in the employment market.

If one sees art history as a discipline devoted only to attribution studies, to establishing factual data and to describing works of art — re-inventing them in words — for the delectation of the public then it is a limited discipline indeed. In general studies welcome a methods and approaches course, in which they can stand back from the content of art history books or art books and see them as constituents within a history of art history. But this falls short of an adequate solution because it leaves the main part of the learning process unworked and requires the students themselves to apply the techniques of criticism and analysis they have learned to their study of Michelangelo or Monet.

The problem is, that given the predominantly monographic nature of the literature of art history, there is a gigantic gap to be bridged between the theoretical structure of Foucault's *History of Sexuality* and a study of the nude in painting that escapes from the essentially aesthetic trajectory of, for example, Kenneth Clark. There are several approaches that allow for a theoretical strengthening of the under-

graduate syllabus without throwing the baby out with the bath water.

On the one hand, dealing with familiar images like Manet's *Olympia* or Poussin's *Et in Arcadia Ego* it is reasonable to say, forget the formalist analysis of the Roger Fry mode that is still so prevalent, albeit disguised, in art history texts, to forget the artist's chronological development and this particular picture's place in that development, to forget the Panofskian iconographical study and the treasure hunt for borrowings. Instead look at these images, say, as a system of signs and analyse the narrative structure accordingly, or take nudity as an artificially constructed ideology and analyse these images on the basis of a historical theory about power, gender and sexuality.

We all know from Gombrich that looking is a learned activity like reading but what Jonathan Culler, writing in a different discipline and drawing on a wide variety of writers and critics, establishes very cogently, is the gender directed nature of this process and the way in which the power structures created by that process have determined the parameters of literary debate and scholarship.

Gombrich's psychology of perception, ingenious though it was based on work done for research seminars in the late 1950s, *Art and Illusion* ignores gender as well as ideology, and art historians can learn a great deal from Culler's text. Or, to take another example, Foucault's essay "What is an author?" exposes the complicated process through which individual authorship attains ascendancy in western culture. Authorship, Foucault convincingly argues, is not a neutral concept, a natural category but one that is constructed.

This has important consequences for the history of art and, by studying an essay like this, students can begin to address themselves to the historical processes whereby certain sorts of objects are privileged and others disappear from sight. They can start to think for themselves about methodology, an art historian reading this essay soon becomes aware that the principle of individual authorship and the concept of the *œuvre* excludes collective enterprises, of which there are many in the history of art and especially of craft and of media like photography.

One might proceed to compare Foucault's historical discussion of authorship with Rosaloto's psychoanalytic examination of paternity and the signature. This need not preclude the acknowledgment of signature as a function within production.

Theory is immensely appealing to students because it can provide answers. It also has its dangers. It is no accident that the appetite for theoretical studies should manifest itself so ardently under a government which justifies its actions on the grounds of economic theory and blind faith in the face of what is experienced by large numbers of people. Theory is democratizing in that, once you have grasped the language and the concepts, you are a member of a club that is not defined by class boundaries.

The class profile of students entering art history departments in universities has, happily, changed somewhat during the past decade. Nevertheless, within the conventional framework of art history teaching, the economically and culturally privileged student who has travelled abroad is often academically advantaged.

All admissions interviewers in the subject have their own stories of the interviewee who, shown a photograph of a painting by an eighteenth century English portrait painter and asked merely to suggest which century it might have been painted in or to say something about it, says: "Isn't it a Hopper? I thought so, it's like the one in the drawing room at home." The recent attention to theory has shifted the power centre from the unique image or object which has to be sought after, to the text which anyone can get out of the library and from there on the battle is an intellectual one.

Theory can at the same time be an escape from a rigorous analysis and a way of avoiding analysing visual images and artefacts. A preoccupation with theory should not facilitate an escape from the empiricism that insists that the same rigorous analysis that we might apply to patronage in the Habsburg empire or the court of Henry VIII be also applied to the way the arts are dealt with in Thatcher's Britain.

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BOOKS

The household economy



by Peter Willmott

Divisions of Labour
by R. E. Pahl
Blackwell, £25.00 and £8.50
ISBN 0 631 132732 and 13274 0

Professor Pahl's latest book, the fruit of nearly ten years' research, is about the meaning of work and the ways in which different kinds of household participate in, and draw upon, the economy. These are distinguished as the formal economy, the informal or communal economy (whose work can be subdivided into paid and unpaid) and the household economy (whose activity he sometimes describes as "self-provisioning").

The first part of the book is historical, reviewing the roles of households and of different household members in a changing economic and social structure. The account is fascinating and instructive. Its principal value in terms of Pahl's study is that it shows that the idea that households are normally dependent for their goods and services on a single (male) wage-earner has never been wholly true and is anyway of relatively recent origin. Since paid employment began, large numbers of women have earned some money in the form of wages, and from the viewpoint of the household itself the fundamental economic unit has always been the household rather than the individual earner. The "one-sided emphasis", as Pahl describes it, on a particular kind of work - that in employment - has obscured the continuing role of the household in the wider economy and undervalued the contribution of women. "Women", as

he rightly says, "are perhaps more likely to perceive the household as the basic economic unit and to arrange their balance of work in terms of the needs of the household as a whole."

The second part of the book reports and discusses Pahl's fieldwork in the Isle of Sheppey, a location which he chose not only because of its accessibility from his university at Canterbury but also for other sound reasons. It was a relatively self-contained labour market, it enjoyed a reputation (which turned out to be false) as "a seething centre of fiddlers", it had experienced high levels of unemployment, following the closure of the Sheerness dockyards in 1960 and again more recently, and its industry included "new" and "traditional" kinds of firm. It thus provided a convenient setting in which to explore some of Pahl's initial questions about the relationship between unemployment and de-industrialization on the one hand and the so-called "black" or "hidden economy" on the other.

Everyone is familiar with the disadvantages of case studies of particular communities - above all, that the findings may not be representative - and the method has, partly for this reason but also for others, been largely neglected since the 1960s. Pahl puts up a spirited defence. A community study, he says, allows an examination of the interrelationships between different local institutions and aspects of life, in a way that would not be possible with a wider and more representative sample survey. He explains, furthermore, that with a case study "the inferential process turns on the theoretical, necessary linkages... the validity of the extrapolation rests on the cogency of the theoretical reason-

ing". His own study combined local history, ethnography and a sample survey of 730 households. It does hang together intellectually - that is, the findings seem to make convincing sense - but it has to be said that, enlightening though the qualitative material is (particularly the penultimate chapter with its case studies of two contrasted families), the main impact of the field research comes from the survey findings.

As already suggested, the central empirical question is about how households get their various tasks done so as to meet their needs. How much activity occurs in each of the three economies mentioned earlier? How does the balance vary for different kinds of household? And how is work shared within households between husbands and wives?

The study shows that women do much more domestic work than men, even when that is interpreted widely to include such tasks as vegetable growing, car-cleaning and house repairs as well as cooking, child care and housecleaning. Women's participation in the labour force is strongly related to the household's stage in life, fewer mothers working in paid jobs when their children are young, more when they are older. The share of domestic work done by men is in turn related to their wives' paid work: though the balance always remains unequal, husbands do more if their wives are employed part-time than if they are not employed, and do still more if the wives work full-time.

These findings are less novel than Pahl seems to recognize. They confirm earlier research, including a large-scale survey in the London region in 1970 which provided Michael Young and myself with the statistical data for *The Symmetrical Family* (1973). That book included tables making all three of his points, and, though his research on household work is more detailed in most respects, it is less in some: we were, for instance, able to show with time budgets that working wives did more hours of work in total, not just within the household.

Pahl does, however, demonstrate something we did not, though we certainly asserted it: that (with the important exception of the unemployed) if husbands do less work outside the home they do more in it. His research also shows that the general level of do-it-yourself is high. Four fifths of households which had had broken windows fixed, had done it themselves. And at least as much do-it-yourself was done when wives worked in paid jobs as when they were full-time housewives.

Another conclusion derives more from Pahl's background review than from the survey. It is that, contrary to the stereotype which he himself promoted at an earlier stage, the "black economy" is probably declining in importance in Britain. The main reasons are the growing effectiveness of tax and social security inspectors and the increase in unemployment



Alleys behind the nineteenth-century houses of Sheerness built for workers in the Admiralty dockyard. Left, women gathering driftwood on Whitby beach (photo by Frank Meadow Sutcliffe 1853-1941). Both illustrations are taken from Divisions of Labour.

itself. Paradoxically, as the Sheppey research shows, the unemployed do little informal work either for others or for themselves. Pahl argues that the explanation in the first case is that they usually cannot afford tools, materials or private transport, and in the second that they seldom have cars to repair or own their homes.

Pahl had expected to find a trade-off between money and time. With less of the former and more of the latter, the unemployed would, he thought, be obliged to look to informal sources of labour, rather than formal, for work they needed doing around their home. More important, they would be free to offer their own informal labour, and would do more in their own homes as well. Obviously, some unemployed people do behave in this way, but in general the assumptions have been disproved by the research. Those who do most work in both the informal and household economies are the employed. In line with what has been noted earlier about do-it-yourself, when both partners have paid jobs households do more self-provisioning and more informal work for others. As Pahl comments, "the busy people do more". This is the most important empirical conclusion from the research.

His only explanations for this finding - lack of capital and absence of need - hardly seem adequate on their own. He hints at other reasons when he talks about informal work as "a reflection of a particular kind of life-style based on the skills and reciprocities of the work of everyday life". But such generalities do not take one very far. How are these differences in life-style to be explained? The financial argument clearly has some force. Of course "people need money", and Pahl is right to point out that, though this statement may be banal, it is "overwhelmingly important". But other factors presumably play some part. How far, for instance, do the differences between the employed and unemployed reflect morale? Do some unemployed men in Sheppey - and British more generally - suffer from the kind of apathy uncovered by Marie Jahoda and her colleagues in their classic study in the Austrian town of Marienthal in the 1930s? The unemployed are often

unskilled: does this not mean that they both have fewer skills to offer in the informal economy and are less often members of social networks which include skilled workers who could help them? And what about other influences, such as family subculture or the quality of husband-wife relationships? Disappointingly, such issues are not explored.

The reader - or, at least, this reader - has much the same sense of dissatisfaction with the treatment of polarization, a notion which dominates the concluding chapters, and which Pahl describes having emerged as "one of the main conclusions of the Sheppey study". He says that "there is a complex process of polarization developing among ordinary working people, the consequences of which have not yet had much impact on contemporary theory and practice". The polarization is described as "households busily engaged in all forms of work at one pole and households unable to do a wide range of work at the other".

As it stands, this seems little more than a restatement of the familiar concept of cumulative disadvantage: "to him that hath shall be given", "the poor pay more" and so on. But deplorable though this is, has it not always been so? If the differences are wider than in the past, in what ways, to what extent and why is this so? To answer such questions, one would need to define polarization more precisely, suggest how to measure it and then examine it empirically. Until there is some clearer thinking about what is under discussion, how it is thought to be changing and how it can be operationalized for research purposes, we have little more to go on than a vague assertion that something important is happening.

Divisions of Labour is, like most of Pahl's writings, concerned with crucial developments in British society and is a valuable contribution to understanding and debate. But this substantial study does not succeed as fully as might have been hoped in coming to terms with the issues.

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BOOKS

Half a cycle

York Mystery Plays: a selection in modern spelling
edited by Richard Beadle and Pamela Kling
Oxford University Press, £17.50 and £5.95
ISBN 0 1981 1189 4 and 811 197 5

The York Mystery Plays constitute one of four cycles of medieval religious plays which have been substantially preserved in manuscript form, and represent a major literary and dramatic achievement of the English middle ages. Like the other three collections, the Chester, "Towneley" and "N-Town" Cycles, the York Cycle was a drama of the fall and redemption of man, which aimed to celebrate and explain the Christian story from the creation to the last judgment. The York Cycle, which is known to have been performed regularly in the fourteenth century, survives in a single manuscript written between 1463 and 1477, compiled from copies of the individual plays held by the craft-guilds, each of which performed the play assigned to it in York at the early summer feast of Corpus Christi.

The performance of the plays or pageants, lasting from fifteen to thirty minutes each, was given on and from specially crafted big vehicles known as pageant carts, at twelve specified stations in the city. Each play would thus be given twelve times, and probably be an amazing procession drama in forty-eight episodes, which is known to have begun at 4.30 am, did not end before midnight.

The present volume is derived from the full critical edition of *The York Plays*, and offers 22 pageants in modernized spelling, with a lively introduction and informative headnotes to each pageant, and unfamiliar words and difficult passages glossed at the foot of

the page. It is thus aimed not only at students, but at "the general reader" and "the imaginative director". That being so, it competes with Canon Purvis's well-known modernized version of the complete cycle, which is available in paperback, and Peter Happé's Penguin edition, *English Mystery Plays*. But the former gives only a limited sense of the language, and the latter offers 38 diverse plays, only ten of which are from the York Cycle. So this publication should be welcomed as the first seriously to engage the non-specialist in the York Cycle.

The editors have selected only five of the eleven pre-New Testament plays of the original, and omit altogether nine plays on subjects falling between the crucifixion and the last judgment. The concentration is therefore on matters central to Christian history and practice as today considered in the Anglican tradition. Hence plays centred on Mary are largely excluded, and a distorted view of medieval Christianity is offered. On other grounds it is a pity that all the plays are not here, because the sort of general reader whom the book will attract would probably in all cases expect a complete text. And since the original language is rightly valued by the editors, a pronunciation guide should certainly have been provided.

The said, this book has great strengths. The texts, with their alliterative cast of expression and elaborate verse forms, are well set out, and the headnotes are scholarly and precise, rich in information and imaginatively fresh in response; and all this in a manner which impresses on the reader the essential dramatic dimension. A good example of this is the analysis of the dramatic moment in *The Crucifixion* when, the audience having been diverted by the callous and comic interplay of the four soldiers, the cross is raised with Christ on it and cruelly dropped into the mortice; at which point, Christ speaks as the suffering saviour interceding with God on behalf of sinning man.

Brian Stone

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Talking heads

George Alexander Stevens and The Lecture on Heads
by Gerald Kahlan
University of Georgia Press, \$25.00
ISBN 0 8203 0693 2

The Lecture on Heads was an astonishing success story of the eighteenth-century theatre. It was invented by George Alexander Stevens, a minor and probably mediocre actor who began his career in East Anglia. He had a brief spell at Drury Lane in 1745-46, aspiring at one point to the role of Hamlet. His chief talent in this part seems to have been resourcefulness: when the audience hissed his serious interpretation he turned the play to burlesque and drew "repeated outbursts of laughter and applause".

Later, while working at the Smock Alley Theatre, Dublin, he published a topical burlesque of modern tragedy, *Dinner upon Distress; or, tragedy in one taste and belonged to a club called the Nassau Court where elaborate mock legal protocol was observed and subjects of humour solemnly discussed. He also wrote for public performance a comic lecture, *The Humorous*, a satirical catalogue of well-known characters, after he had spent some further years in the London acting world which gave Stevens acceptance if temporary fame.*

The Lecture on Heads, first delivered at the Little Haymarket Theatre in 1764, was "an instantaneous and resounding success, to be quoted, printed, adapted, printed, revised, spelt out, satirized and applauded for the next half-century". Stevens gave performances up and down the country until his death in 1780; it was extensively plagiarized and imitated during his lifetime and it continued to be performed until the turn of the century in England and until 1820 in America. The explanation for its popularity is hard to see, because all the evidence makes the *Lecture* sound a discouragingly tame affair. Stevens (or his plagiarists) stood in front

of a long table covered with papier-mâché busts, wigs, paintings and other visual aids which he used in his dramatized presentations of types of folly - hypocrisy, extravagance, ostentation, for example - but there was no topical or political reference to give the discourse urgency. The effect must have been very like puppet theatre in its use of caricature and ventriloquism and the actor would need versatility and athletic vigour in shifting rapidly from one role to another.

Professor Kahlan suggests that the popularity of the piece depended on its appearance in "a great age of satire", but judging from the text the reverse seems to be true. In the age of Swift, Pope and Gay satire had a sense of purpose and immediacy and Pope was not entirely hubristic in claiming that men not afraid of God were afraid of him. No one can have been afraid of *The Lecture on Heads* with figures as outmoded as Sir Languish Lipping or as traditional as Sir Full Fed Domine Double Chin or the Quack Doctor. *The Lecture* springs not from an age of satire but from one that was complacent in its enjoyment of eccentricity. It is a shadow of *Tristram Shandy* rather than a pale *Dunciad*. *The Lecture* succeeded also at a time when there was an extraordinary dearth of dramatic talent and when theatrical novelty had a clear run. But its intrinsic merits are small: even the concluding picture of the Methodist, in this case directed at a specific target in George Whitefield, is little more than a rant.

This book brings together all that is known of Stevens' career, prints a plain text of *The Lecture* and provides an extensive record of performances in Britain and America, with a selection of reviews and other contemporary records of the account is admirable but the critical problem posed by the popularity of *The Lecture* remains.

John Chalker

John Chalker is professor of English at Westfield College, London.

A Dictionary of Classical Reference in English Poetry compiled by Eric Smith is a guide to classical names and references in English poets. It is published by Boydell & Brewer at £20.50.

A poet's spiritual search

Petrarch: poet and humanist
by Kenelm Foster
Edinburgh University Press, £9.00
ISBN 0 85224 485 1

No reader who approaches the life and work of Petrarch can fail to be affected by the sense of an enormous promise that was only partially fulfilled. He was, of course, one of the greatest scholars of the middle ages, as he was one of the finest poets, both in Latin and in Italian, but, at the same time, a deep current of restlessness and dissatisfaction runs through much of his work. He sought love and fame, and passionately attempted to justify the claims of both, yet he knew that in each case the desire was potentially sinful and the object illusory.

In the end, he abandoned his epic poem in Latin, the *Africa*, on which he had thought to rest his poetic reputation and for which he had been crowned with the laurel wreath in Rome, and he turned increasingly to the realm of moral philosophy. But the contradictions always remained, and he spent much of the last twenty-five years of his life organizing and reshaping his long sequence of poems, the *Canzoniere*, a sequence that was not only aesthetically obsessively concerned with his disastrous passion for an earthly woman, but was written in language, Italian, whose literary status in relation to Latin had always been for him questionable. And so today, paradoxically, it is on the poems of this vernacular love sequence, which he himself, with ambiguous condescension, referred to as "trifles" or "fraternities", that his fame largely depends.

Petrarch is not an easy writer to present to a modern audience, far less so than either Dante or Boccaccio. Apart from the fact that most of Petrarch's writings were in Latin, the two vernacular works, the *Canzoniere* and the *Trionfi*, can so readily appear remote in their concerns and laboured in their psychology. So George Santayana could write of the *Canzoniere*: "In the quality of [Petrarch's] mind there is nothing truly distinguished... He is lachrymose and sentimental at the end as at the beginning."

The new book by Father Kenelm Foster, by far the best general study of Petrarch available to English readers, is thus doubly welcome, both for the uncompromising way in which it affirms the importance of its subject, and for the detailed scholarship which provides the support for such an affirmation.

The book is divided into three chapters; the first presents a short sketch of Petrarch's life, while the last traces the growth of Petrarch's philosophical thought, with special reference to the *Secretum*, the imaginary and deeply self-revealing dialogue that he conducts with his spiritual master, Saint Augustine. But the bulk of the work, nearly two thirds of it, is concerned with the *Canzoniere*. Here the author has little time for the merely passionate or for the pathetic in Petrarch, for that quality of hopeless love-yearning that has bewitched, mystified, or irritated generations of readers. Instead, we are offered the reflection, one that draws its strengths precisely from the dissatisfactions of a life, and which reveals a mind struggling to see clearly and to know rightly, attempting constantly to find some point of reconciliation between poetry and ethics, experience and ideals. And the account we are given is one that is minutely argued, as attentive to the verbal intricacies within a single line of poetry as to the broad themes of the collection as a whole.

Not that this new book quite serves as an introductory work which its format might suggest. Anyone coming to it without some knowledge of the philosophical and theological traditions of the middle ages may well find themselves in difficulty. With that single reservation, it can be warmly recommended as a notable addition to the valuable "Writers of Italy" series.

Stephen Minta

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Homer's methods

The Iliad
Martin Mueller
Allen & Unwin, £15.00
ISBN 0 04 800027 2

Modern studies of Homer, in particular of the *Iliad*, abound. Mueller's book is a general introduction to contemporary views of the poem, but one which demands a certain level of sophistication from the reader, whether in Greek or in translation.

The introduction considers the question of the *Iliad* and history, its relationship to the past, to the contemporary world in which it was composed and to subsequent Athenian culture. Some large and interesting questions emerge but they are dealt with too briefly. For example, Mueller states that the poem is about "the pan-Hellenic consciousness of the *polis* world in its earliest stage". But the possibility that the Homeric poems may be a reflection of this new consciousness rather than its creator is highly debatable. Again, he characterizes heroic poetry as "never a description, but always a fiction of desire, born out of fascination with yearning for and revulsion at physical violence". This preoccupation with violence has been over-emphasized by twentieth-century critics: it is we who are obsessed, not Homer.

Mueller discusses judiciously the subject of oral poetry, stressing the importance of Ruth Finnegan's work and firmly rejecting the notion of an oral poet. The central part of his book is accordingly devoted to an interpretation of the *Iliad* without regard to the question of its origin. There are chapters on the plot (in which its tragic structure and archetypal design are highlighted), fighting, similes and the gods. There is much here to stimulate critical debate, notably on the poem's attitude to war

and on the Homeric vision of the differences between gods and men.

Returning to the composition of the *Iliad*, Mueller finds a key to this question in the poem's deployment of doublets, passages of five lines or longer which are repeated only once or twice. Such lines cannot be formulaic since that would run "counter to the principle of economy"; instead they imply a model-copy relationship, a hypothesis which is strengthened by the high degree of mutually reinforcing associations or "contextual surplus" shown by these doublets. Mueller concludes that there are two different processes of composition at work - the improvisational one of the traditional oral poet and that of an "individual mind re-using or adapting fragments from a previously existing text". Building on G. P. Goold's theory of the "progressive fixation" of the Homeric texts, Mueller speculates implausibly that Homer "possessed a copy of the *Iliad*, to which he added over the years until it reached its present stage". Mueller himself admits that the contextual surplus yielded by the doublets may be a by-product of the poet's associative memory and that there may be instances when the poet unconsciously remembers his own combinations of formulaic phrases - can we be sure, then, that the existence of doublets implies a model-copy relationship? The mystery that confronts us is that of the poetic process, even more inscrutable in the oral than in the literate poet. But it is easy to be negative about solutions to the Homeric question. A final chapter on the life of the *Iliad* reminds us of the perennial nature of the questions raised.

Penelope Murray

Dr Murray is lecturer in classics at the University of Warwick.

Greek Musical Writings I: the musician and his art by Andrew Barker is the first of two volumes offering a translated selection of Greek writings on music with commentary. It is published by Cambridge University Press at £27.50.

CHAUCER AND THE IMAGERY OF NARRATIVE

THE FIRST FIVE CANTERBURY TALES V. A. KOLVE



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Derek Pearsall, *The Times Higher Education Supplement*

1984 668 pages Boards
ISBN 0 7131 6412 3 £35.00

Edward Arnold

41 Bedford Square
London WC1B 3DQ

BOOKS

Mind and matter

A Study of Spinoza's Ethics
by Jonathan Bennett
Cambridge University Press, £30.00
and £9.50
ISBN 0 521 25867 7 and 27742 6

Although this is an important and impressive contribution to Spinoza studies, I should be sorry if it became the standard gateway to Spinoza for modern readers as it allows important aspects of Spinozism to slip into the background. Not that it is likely to become so, however, for it would be almost impossible to read it without Spinoza's text at the ready. Whereas some of the best books on Spinoza distill what the author has learnt from Spinoza and reexpress it in an independently accessible manner, the present book is for both author and reader work at the coal face of the text.

Bennett pays unusually close attention to the details of Spinoza's demonstrations. Commentators have taken varying views of the significance and success of Spinoza's "geometric method". Bennett's general comments on their status are helpful. He points out that, despite their formal weaknesses, they often only require additional premises reasonably available to Spinoza to become valid. Yet I think he sometimes misses their force. At times, indeed, his own style of thinking, and the kinds of thinking he is open to, seem just too remote from Spinoza's thought for him to make sense of it. He might have been helped if he had been more aware of how some Spinozistic themes, on such matters as error for example, have been developed in the Hegelian and Bradleyan tradition of which he betrays his neglect by his assertion that that very Bradleyan theme, the possible existence of several spatially unconnected spaces, was first broached in this century.

One large aspect of Spinoza which Bennett cannot take quite seriously is his theism. Of course, it has been contentious since Spinoza's own day whether his philosophy was not to all intents and purposes atheistic. Bennett rightly rejects this idea, holding that though in Spinoza's view, the totality of all things is referred simply to the totality of all things, the totality is a fitting object of religious emotion. But Bennett can neither stomach Spinoza's *prima facie* religious attitudes nor take seriously any suggestion that the totality, qua individual, has such traditional theistic properties as knowing everything and, if not love for man, at least a love for itself (of which the happy man's enjoyment of his life is a part). But whether or not one takes it seriously as putative truth, trying to detach the remainder of Spinoza from his belief in it surely distorts interpretation of the text.

For example, Bennett thinks that Spinoza did have quite powerful reasons for his panpsychism, the view that all physical events have mental

counterparts. But (unlike Russell) he cannot see how the mental counterparts of brain states can be "ideas" of them (as opposed to being ideas of what the individual is thinking about) in any useful sense, and tends to treat cutting them such as merely a terminological oddity. But once one grasps that the total mental parallel of the physical world is God thinking about it, and that my mind is a counter in physical nature which is my brain, this puzzle of interpretation seems gratuitous.

In the last century absolute idealists thought Spinoza on the way to their conception of a totally mental universe, while in the present materialist times the tendency is to see him as on the way to a completely materialistic conception of the universe — the truth being that Spinoza thought that the

universe was both mental and physical through and through. While Bennett does not exactly make a materialist of Spinoza, he is sufficiently of the view only to find real force in a materialist version of his viewpoint. Moreover, he interprets Spinoza's view of the mental very oddly as being that it is not intrinsically intentional (or about anything). I cannot believe that a rather Davidsonian view for which the efficacy of mental occurrences pertains to them only in virtue of qualities having nothing to do with their propositional content could possibly be Spinoza's. Much more convincing is his interpretation of Spinoza's view of individual physical things as properties of space, and his version of what is known as the objective interpretation of Spinoza's attributes is at least challenging. Rather oddly (and indeed the blurb says the opposite) Bennett thinks that

Spinoza's actual moral philosophy and moral psychology have little grounding in his metaphysics and finds little of value in either. Indeed, his tone becomes quite scathing as he goes through them. In his eagerness to display the shortcomings of Spinoza's demonstrations here, he seems to lose interest in digging beneath the surface of the inadequacies of his geometric method to arrive at the living thought. He is less out on a limb in condemning the logic and deploring the probable psychological dynamics of Spinoza's treatment of immortality. But here again once grant that Spinoza really does believe in a cosmic mind that thinks, and whose ideas are finite minds, and the train of thought is logical (and even akin to an important twentieth-century thesis — the objective immortality taught by A. N. Whitehead) for the heart of it is that

even when God no longer affirms the idea of me as an existent, the most reliable idea of me as an essence (more or less truly individual according to one's degree of rationality).

Of course, Spinoza is above all important for that naturalistic view of man and the world which is his great appeal to Bennett, as to many others, and he does reject the supernatural, every sense. Yet his view of nature makes it something much more godlike in a traditional sense than is allowed for in this book, a view of nature which some have claimed that modern physics (which Bennett himself sees as congenial to Spinozism) favours.

T. L. S. Sprigge

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Right and proper

Right Principles: a conservative philosophy of politics
by Lincoln Allison
Blackwell, £14.00
ISBN 0 631 13475 1

Is a conservative political philosophy possible? Many conservatives have thought not. Upholding the primacy of sentiment and prejudice over the claims of reason and theory, conservatives have often sought to represent political philosophy as itself an unconscious enterprise. Their view is strangely at odds with the history of ideas in modern times. It is hard to think of the political writings of Sir Robert Filmer, David Hume, George Santayana and Michael Oakeshott, for example, as anything other than essays in conservative philosophy. The conservative conviction of the impossibility of genuinely conservative political philosophy has become positively anachronistic in the past few years. During which a number of younger thinkers — notably John Casey, Roger Scruton and David Levy — have mounted a systematic challenge to the intellectual hegemony of the liberal and radical left. Where the idea that conservatism and philosophy are strangers to one another is still entertained, it probably rests on the persistent rationalist fallacy that philosophy's object must be the discovery of immutable principles of practical reason.

Lincoln Allison's point of departure in *Right Principles* could not be further removed from this sort of rationalism. His starting point is what he calls conceptual scepticism — the position that political concepts are often, if not typically, confused or incoherent, capable of being used in support of almost any policy, and for that reason practically empty. Unlike the rationalist, the conservative sees that many political deliberations cannot be settled by rational deliberation and must instead be resolved by the arbitration of interests. Nor is the conservative, as Allison

conceives him, particularly optimistic about men's capacity to reach a balanced settlement of their conflicts. The conservative sees man as flawed in his nature, not invariably bad but partially and permanently so, and this moral pessimism informs conservative suspicion of projects for the political alleviation of the human lot.

If conservative thought has a single distinguishing mark, according to Allison, it is perhaps in its repudiation of humanism — where what is meant by humanism is not atheism, but the religion of humanity as it is set out in the works of Auguste Comte, J. S. Mill and Marx. Conservative philosophy may very well be thoroughly secular and even atheistic in outlook, as it is in Hume, but it always opposes the divinization of man which has occurred in the twentieth-century political faiths. As Allison puts it in a fine sentence:

"The worst of all worlds is one in which religion is serious and godless, in which the body of the Lord is itself transubstantiated into an abstract idea of the spirit of man, and taken to spirit of man, internationalism and socialism. Allison's conservatism, then, is a sceptical, secular, somewhat relativistic affair, in which the contribution of philosophy is mainly the negative and critical one of illuminating the incoherence and emptiness of the dominant political concepts. This is only one among many conservative philosophies Allison himself recognizes, but it is less than clear that it is the most compelling. Allison's conceptual scepticism, which is one of the foundations of his defence of conservatism, does not seem to me to be fully coherent. Either it means something like W. B. Gallie's essential contestability — the thesis that some concepts are inherently liable to intractable dispute — or else it invokes a doctrine of the primacy of practice, akin to Oakeshott's, which represents moral and political concepts as shadows cast by concrete, and historically specific, patterns of social activity. Allison, however, distances himself from Gallie, and nowhere discusses Oakeshott's account of the constitutive role of practice in generating political ideas. Further, even if his conceptual scepticism were not ambiguous, it would have necessary implications for political life — as Allison is ready to admit. The scepticism which supports a conservative political outlook is, I think, nothing as reconciling as Allison's conceptual scepticism, but simply a doubt about our capacity to discover politically relevant moral truths.

Whereas one of its fundamental theses seems to fall, Allison's *Right Principles* is in many ways an exemplary piece of political argument — clear and modest in style, but with many an arresting observation. On occasion the book descends to reproducing the sordid banalities of academic conventional wisdom, as when Allison tells us that the market "takes no account of the existence of groups and of power" — as if Adam Ferguson and Adam Smith had never written. Much in the same vein, Allison is concerned to mark a far sharper distinction between contemporary conservatism and classical liberalism than can be justified either by their doctrines or by their histories. But in general the book has the defects of its virtues — the virtues of a partisan statement of one style of conservative thought, which to political theorists can reasonably ignore.

John Gray

John Gray is a fellow of Jesus College, Oxford.



A relief of Menander with three masks of New Comedy from The Plates to Volume 11 part 1 of the Cambridge Ancient History, £15.00.

Capacity for evil

Wickedness: a philosophical essay
by Mary Midgley
Routledge & Kegan Paul, £14.95
ISBN 0 7100 9759 X

Certain crimes from time to time take the headlines as displaying a peculiarly horrific form of human wickedness. Very often, those found guilty serve a different kind of prison-sentence from that imposed by the judge and legal system: a sentence of solitary confinement. This is because, particularly where the crime involves sexual violation, torture, brutality and murder, or where children or women are the victims, isolation from other prisoners is necessary for the offender's own protection. This demonstrates, if it were necessary to do so, that a vast gulf separates the instinctive reaction to evil of the ordinary person (including the "ordinary" criminal) from that of more sophisticated and more tolerant interpreters of human behaviour.

Mary Midgley's lucid and arresting book challenges the sophisticated perspective on crime and evil in two respects: first of all in arguing for the simple recognition of the existence of evil, and second in asserting the responsibility of people for their own choices. This involves exploring the question of motives as expressed in terms of purposes rather than as blind forces pulling helpless human beings in some irresistible undertow. Against

reductivists like Friedrich Nietzsche and Sigmund Freud, Midgley sees these motives as varied and multiple. She challenges on the one hand the determinism of the social scientist who turns public wickedness into a social problem and private wickedness into a mental illness, agreeing with Hannah Arendt that it is the spirit of our age to assert (falsely) that there is no such thing as individual wickedness. But at the same time she rejects Freud's picture of confrontation: a stark, instinct versus social or internalized repression. In a typically colourful phrase she describes this as the notion of culture as a weed-killer put down to control the growth of social instincts. We are not, then, according to Midgley, instincts, nor of our own social forces represented by "class", culture, and family settings. Instead we have capacity

for wickedness — either the maverick individual variety displayed by mass murderers and rapists (although the same attitudes in a non-criminal way in the quiet backwaters of family life) or the public variety which has resulted in the great acknowledged crimes of the century — genocide, bombings and the waging of aggressive war.

The argument is conducted independently of any theological perspective but it is essentially sympathetic to the Christian view of the devil as God's subordinate — a fallen angel, rather than an equal and independent counter-force to the powers of good. The dualist view, Midgley believes, produces a radical incomprehension of evil together with the take-it-or-leave-it approach to morality which is involved in such modern ethical positions as emotivism, existentialism, and cultural relativism. Essentially, this is to assert the priority of the good and the existence of a common set of values. One of the great enigmatic figures of evil in this century, a small man pursuing a bureaucratic career — Adolf Eichmann — spoke of the "revaluation of values". It is Midgley's position that humans can neither invent new motives, nor "invent values" to which those motives might correspond — this against the views of Nietzsche who originated the phrase and Sartre who reiterated it. On the contrary, Midgley prefers the Darwinian view that any animal with well-marked social instincts, if it acquires something like human intelligence, must also acquire a moral sense or conscience.

These may seem like old-fashioned views, and indeed Midgley claims that it is a mistake to see Victorian values as today's main enemies. But she is looking forward rather than backwards to a sounder and more informed view of human nature on which a more secure value-system may be based.

Wickedness is an unusual title for a professional work on moral philosophy. This is because it so conspicuously flouts the value-free ideal. It conveys at the same time both moral condemnation and denunciation and also the attribution to humans of responsibility for their own deeds. Since this is the essential message of the book it was an elegantly economical choice of title.

Brenda Cohen

Brenda Cohen is joint editor of the *Journal of Applied Philosophy*.

BOOKS

MATHEMATICS AND PHYSICS

Creating physics

Theoretical Concepts in Physics: an alternative view of theoretical reasoning in physics for final year undergraduates
by M. S. Longair
Cambridge University Press, £25.00 and £8.95
ISBN 0 521 25550 3 and 27553 9

The special character of this book is not apparent in the title: the sub-title is more indicative. And I should say straightaway that a physics undergraduate who has no ambition to be a theoretician should not be diverted from reading this interesting book by the word "theoretical" in both title and sub-title. As the author explains in his introduction, although the book sprang from a lecture course for prospective theoretical physicists, it should be of interest and value to any undergraduate physicist.

Professor Longair's aim is to present a treatment of the central pillars of the subject (mechanics, electromagnetism, thermodynamics and statistical mechanics, quantum mechanics, special and general relativity) which will convey to the reader more of the excitement, diversity of approach, intuition and doggedness involved in the way the subject of physics is created; more, that is to say, than does the systematic, piece-by-piece, formal presentation of the subject which is customary in undergraduate courses. To do this he adopts a simple and successful device: instead of chapters he has seven case-studies. In each of these, he explains the development of one of the pillars in its historical context and traces the crucial contributions and insights of the major participants — Tycho Brahe, Kepler and Newton in the first; Faraday, Maxwell, Ritz in the second; and so on.

There is a great deal to entertain in such a treatment (Planck the student glibly about Kirchhoff the boring

too rigidly for the subtleties of real statistical science).

The book does have strengths, although these are not as well developed as some fashion most of the relevant material: elementary descriptive statistics, probability distributions, statistical inference, regression, and correlation. It contains computer programs, and exercises to encourage readers to write their own; it thus can ask the reader to do some things which traditional textbooks cannot (such as generating observations from distributions). And it has numerous general exercises, tailored to the contexts of the life science, physics, and engineering.

Even alongside these welcome features, however, there are deficiencies. Non-parametric methods are ignored, and analysis of variance treated cursorily as an off-shoot of regression. Because the programmes have been deliberately kept clear of the main text, so as not to dissuade readers who do not understand Commodore Basic, the computing part unfortunately comes across as an optional extra. And the exercises give little feeling for the kinds of data we encounter in the different sciences, with their different sources of variability. The problems set are barely more than arithmetical routines decorated with language appropriate to the chosen context; and the answers provided are merely numerical, devoid of discussion.

Compounding all this is a failure to warn against some of the common pitfalls of statistical inference (confusing correlation with causation; uncritically extrapolating; ignoring rounding error); a tendency to use technical terms before they are defined; and a prose style that is, if not unclear, certainly pedestrian.

Lindsay Paterson

Lindsay Paterson is a senior scientific officer at the AFRC Unit of Statistics, University of Edinburgh.

Heavenly motions

The History of Astronomy from Herschel to Hertzprung
by Dieter B. Herrmann
translated and revised
by Kevin Kriclavas
Cambridge University Press, £12.50
ISBN 0 521 25733 6

The Birth of the History and Philosophy of Science: Kepler's *A Defence of Tycho against Ursus*, with essays on its provenance and significance
by Nicholas Jardine
Cambridge University Press, £32.50
ISBN 0 521 25226 1

In the course of the late nineteenth century astronomy underwent a remarkable transformation. Until about 1860, the science was almost entirely concerned with the geometrical and mechanical phenomena presented by the heavens. Astronomers endeavoured to say where any celestial body is, not what it is; and knowledge of the physical nature of the distant stars was taken to be forever beyond human analysis. However, the development of spectroscopy and photography greatly broadened the goals, techniques and ultimately institutions available to astronomers, and thereby gave rise to astrophysics.

Thus, in his *History of Astronomy from Herschel to Hertzprung* Dieter B. Herrmann has focused on the birth of astrophysics and its subsequent development. (The title is a little misleading as it is in fact a history of astronomy from William Herschel's discovery of Uranus in 1781 to 1931, a date in the middle of Ejnar Hertzsprung's career.) The first section is, nevertheless, devoted to the construction and motion of the heavens — classical astronomy — and this casts into sharper relief the endeavours of later astronomers.

Pitched at a semi-popular level the book should be accessible to anyone with even a modest knowledge of

astronomy. In addition, there is a bibliography and a few pages of notes for those who wish to dig more deeply into specific topics. Although Herrmann's work has been through three German editions, this English translation will ensure that it reaches a wider audience. This it deserves to do, for it has two particular merits. First, the author clearly has an excellent command of German language sources, as might be expected from the present director of the Archenhold Observatory, Berlin-Treptow. This serves as a useful reminder that historians of astronomy from English-speaking countries have perhaps not yet paid sufficient attention to developments in the German-speaking world in the nineteenth century and early twentieth century. Second, the book is well balanced. Although the main body of his text is devoted to explaining theory changes, Herrmann never loses sight of the practical concerns that often lay behind or were influenced by these shifts. Also, in the last section on technology and the organization of research, the author sketches the subtle interplay between the direction of astronomical research, instrumentation, observatories, astronomical societies, and the outlets for publication available to astronomers.

There are, however, some flaws. One is that ideas which look odd or irrational by late twentieth-century standards usually get short shrift. For example, we are presented only with the "rational" elements of Thomas Wright's ideas on the nature of the Milky Way — the fruits, it must be emphasized, of Wright's quest to reconcile his scientific and religious views of the universe. Certainly, one result of the author's particular Marxist perspective is to underplay completely the religious motivations that drove men such as Wright, and to ignore the influence of the religious concepts that have often provided the language and intellectual resources for the ways astronomers have talked about and viewed the universe. Nor, more surprisingly, is there any attention paid to the professionalization of astronomy, a topic of increasing concern to many historians of science. There are also a few points where I would question Herrmann's facts.

Robert W. Smith

Robert W. Smith is a member of the department of the history of science at John Hopkins University and historian-archivist to the Space Telescope History Project.

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BOOKS

MATHEMATICS
AND PHYSICS

Force fields

An Elementary Primer

for Gauge Theory

by K. Moriyasu

World Scientific: Wiley,

£22.65 and £11.75

ISBN 9971 950 839 and 950 94 4

Gauge theory is the physicists' name for the general framework of mathematical and physical ideas now used to describe the fundamental forces of nature - one which has led to major advances in our understanding of the physical world (as evidenced, for example, by the recent discovery, at the Organisation Européenne pour la Recherche Nucléaire (CERN) in Geneva, of the weak force field quanta, W^+ and Z^0). As Professor Moriyasu rightly says in his preface, there is now a need for an account of these ideas which is accessible to non-experts: this primer is an attempt to provide one.

It is no easy task. Physics is something of a serial story in which, despite so-called 'revolutions', new episodes build on much that has gone before. For gauge theory, back numbers include special relativity and quantum mechanics, neither within easy reach of the 'intelligent layman'. But what is perhaps the essential flavour of the subject - its use of symmetry to constrain, or even dictate, the form of force laws - can be discussed at a less specialized level. In essence, gauge theories provide a new and remarkable answer to the questions: why are the forces of nature this way and not that way? why, indeed, are there forces at all? The answer is: because this way nature can be more symmetrical.

This view of course has venerable antecedents. Its modern re-birth can be traced to Einstein's work, first on special, and then on general, relativity. The particular symmetry with which special relativity deals is the symmetry between - or equivalence of - all bodies moving in uniform relative motion. In 1905, Einstein showed how to reconcile this symmetry (known to Galileo) with the (by then) very well established electromagnetic theory of Maxwell - with which it had, before his work, threatened to conflict. This particular symmetry does (still) constrain the general form of all known laws, but it is not tight enough to pin down their detailed forms. Einstein sought, after 1905, to make the symmetry wider, and hence (it may sound paradoxical) more restrictive: he wanted a symmetry between all bodies even if accelerated with respect to each other. At first sight, this seems ridiculous. We all know perfectly well that there is a real physical difference between being accelerated and not being accelerated: we feel a force in the first case, but not in the second. So this kind of symmetry requirement can

only be true, if at all, if some kind of force is present. But this has to be a very special force: to preserve the symmetry, it has to act on all bodies in exactly the same way. Gravity is just such a force: all bodies accelerate equally in a given gravitational field. Thus we can make our theory symmetrical as between accelerating observers if we regard it as a theory of gravity. It is (almost) true to say that, in Einstein's general relativity theory, a symmetry requirement generated a force law.

It was natural to try and extend these ideas to embrace the electromagnetic force. Einstein and others made many attempts to do this, within the same general framework, but they were unsuccessful. Modern gauge theories have succeeded in explaining electromagnetism in terms of a symmetry, but it is a symmetry that involves quantum mechanics in an essential way. In brief, a particle such as an electron is described in quantum mechanics by a 'wave function'. This quantity has an amplitude (the size of the wave) and a phase - which is an angle varying between 0 and 360 degrees. As the electron wave travels through space, its phase varies. We can picture it as a little 'clock' attached to the wave, clocking up the changing angle. A single wave can be split into two, which then travel on different paths. If they are subsequently brought together and superimposed it is their relative phase (the difference in the clock angles) that matters. It determines interference phenomena between the two waves. Here we have a symmetry: at some instant, we can change the clock angles of all electron waves everywhere by the same amount, and it will make no difference (just as the social calendar survives a switch to British summer time).

But there is a puzzling feature: how do far distant electron waves 'know' what convention we, here, are using? Perhaps it would be nicer if an electron could reset its clock as and when it chose. But this is surely impossible, because it will immediately be observable as arbitrary shifts in interference patterns. Suppose, however, that there is a force field that precisely has the effect of locally changing an electron's phase 'clock' (much as a local magnetic field will pull round a compass needle): then such shifts could be

allowed, and attributed to motion through the force field. In fact, the force field would allow the 'clocks' of widely separated electrons to vary locally in a mutually consistent way. This force field, which has to act equally on all electrons, is indeed called the so-called 'weak' and 'strong' nuclear forces too are now known to be of the same type. 'Gauge theories' is a misnomer (though past correction): really, they are all 'phase theories'. Moriyasu writes that he has designed his text 'primarily for the reader with only a background in quantum mechanics'. This is unrealistic. Some knowledge of relativity and electromagnetism must be assumed or, rather, in a book at this intended level - supplied. In fact, the text assumes far too much. For example, the Lagrangian of the electromagnetic field in four-tensor notation is freely written down. As to quantum mechanics, we read that 'the use of the path integral is now very familiar' on page 16, whereas the Dirac Lagrangian for the second-quantized electron field is presented without any explanation on page 49. All this is only too likely to stop dead just those readers for whom the book is supposedly written. It will be a pity, because very nearly all such advanced formalism is irrelevant to some of the most crucial ideas - which, as I have said, have to do with symmetry.

The natural language for this is geometry; and this can be made accessible. Moriyasu recognizes this very well, and his discussions of such 'geometrical' topics as fibre-bundle analogues of Maxwell's equations, superconductivity as a theory with hidden gauge symmetry, and elementary applications of topology in gauge theories, all contain much of value. But by not being bold enough to strip away irrelevant technicality, Moriyasu has seriously lessened his chances of introducing a truly wide audience to the beauties of gauge theories.

Ian J. R. Aitchison

Ian J. R. Aitchison is lecturer in the department of theoretical physics at the University of Oxford.

Calculus made simple

Calculus for Physicists

by Richard Dalven

McGraw-Hill, £8.25

ISBN 007 015209 8

'The aim of this little book is to bridge the gap between the calculus you've learned in your mathematics classes and the calculus used in your physics courses.' This opening sentence accurately establishes both the friendly tone and the target: the book is intended as private reading to help physics students who need extra instruction in the

fundamental notions of calculus as they are applied in physics.

The book is concerned with very basic ideas - functions, the meaning of the derivative and the integral (I particularly liked the discussion of the differential dx as it is used in physics) - and goes as far as finding maxima and minima by differentiation, and moments of inertia and mean values by integration. The writing is clear and accurate; the illustrations, problems and extended solutions helpful.

So far, so very good. The book evidently grew out of notes distributed to American freshman physicists, and it is obvious that the author has long experience of student confusions at that level. The culture gap, however, is obvious. For instance, the lack of interest in keeping statements dimensionally balanced would upset a well-taught physicist here. More seriously, I am unclear what readership the book will find in this country, for we normally expect most of this material to be understood by students who have advanced-level mathematics. Some of it is very basic indeed, such as the careful explanation that if $y=f(x)$, the expressions $f'(x)$, y' and dy/dx all have the same meaning; the warnings against trying to cancel the d 's in the last expression; and the exercise 'find the derivative of the function $f(x) =$

Yet the book does not in itself provide a basic course (the notion of a limit is discussed but never formally defined), so it is more likely to be bought for the school library rather than the classroom. At university level, it might assist first-year physics or technology students needing basic mathematical mathematics; it might also prove useful to students without advanced-level mathematics studying physics for medicine or mathematics for biology; and it might be just what further education physics students with weak A-levels need to help them consolidate.

The lack of an obvious target group here is a pity, because the job tackled is tackled rather well.

J. R. Waldram

J. R. Waldram is university lecturer in physics at the Cavendish Laboratory, Cambridge.

BOOKS

MATHEMATICS
AND PHYSICS

Chemical variables

Mathematics for Chemists

by P. G. Francis

Chapman & Hall, £15.00 and £7.95

ISBN 0 412 24980 4 and 24990 1

The title *Mathematics for Chemists* presumably implies something different from *Mathematics for Scientists*. Dr Francis sees particular needs for the chemist to be spatially aware in three dimensions and to have facility with functions of several variables, and so states his presentation accordingly. His choice of examples also has an appropriate chemical flavour, some of these being far from routine. Where else will an undergraduate readily find a companion text. For example, those familiar with the rules of calculus can adopt division by an increment dx as a useful mnemonic rule, but beginners in partial differentiation may be confused when offered the rule without mathematical explanation. The answers are correct, because Dr Francis knows

Numerical solutions

Introduction to Numerical

Computation

by J. Thomas King

McGraw-Hill, £26.75

ISBN 007 034639 9

Computational Mathematics: an

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by T. R. F. Nonweiler

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Computer Mathematics

by D. J. Cooke and H. R. Bez

Cambridge University Press,

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ISBN 0 521 25341 1 and 27324 2

Numerical analysis may be described loosely as the study of methods for obtaining numerical solutions to mathematical problems. The subject includes the mathematical analysis of a proposed method, the derivation of an appropriate algorithm, and the interpretation of the results produced by an associated computer program.

In this undergraduate text on numerical analysis, King keeps the ultimate aim of the production of numerical software very much in mind. Within a framework which is not very demanding mathematically, the traditional topics of root finding, interpolation, quadrature, and so on, are covered in reasonable detail. However, although I accept that in an introductory book it is not possible to include discussions on such advanced topics as eigenvalue problems, there are some curious omissions. For example, only direct methods are considered for the solution of systems of linear simultaneous equations.

The emphasis throughout is on the derivation of reliable, efficient algorithms, and the book includes a number of well-documented Fortran programs which the reader is encouraged to run in some of the exercises (possibly in a modified form). Although most of the programs are simple one-off codes, others have been included to illustrate, in a limited manner, the standards attainable in sophisticated library routines. An example of this is a program which solves a first-order ordinary differential equation using an error estimate to control the step size. References are made throughout to available software - in particular, the IMSL and LINPACK program packages.

This elementary book should appeal to many computer science students, because of its emphasis on software development rather than mathematical rigour. Numerous exercises are included; some involve a certain amount of mathematical analysis but the majority require the use of com-

puting resources. A number of large projects are also presented. Overall, the book compares favourably with the many other similar books available.

The subtitle of Nonweiler's book, which claims to be an introductory text on numerical analysis is somewhat misleading, as the topics discussed are carried considerably further than is usual in an introductory text. That this is indeed the case is amply illustrated by the very detailed discussions on the construction and evaluation of interpolating polynomials, spline approximation, and minimax approximation found in the chapter on discrete approximation. Because of the thoroughness with which certain aspects of numerical analysis are treated, however, many important topics have been omitted. Indeed, following chapters on rounding and truncation errors, the book contains discussions on methods for discrete approximation, root finding and quadrature only.

The main text constitutes only just over half of the book. Much of the remainder consists of a large number of substantial exercises, together with detailed hints and solutions. Many of the problems are of a theoretical nature and serve to supplement the text; others are more practically orientated and require number manipulation or the derivation of a simple algorithm.

The other major component is an appendix containing documentation for a listing of a basic subroutine library which contains codes implemented in the main text. The author admits that Basic is 'not a convenient medium for communicating the structure of numerical algorithms'; indeed, elsewhere a pseudo-ALGOL 60 language is used to describe algorithms. All comments have been edited out of the listings and the reader is expected to refer to the relevant chapter in order to gain some understanding of how a particular subroutine works. This is not entirely satisfactory. For example, in the case of the code implementing adaptive quadrature the process is described in the main text using recursion and the reader is given no guidance as to how the algorithm may be reformulated as an iterative process. Given the absence of any forward reference to the appendix, I was left with the impression that the programs were added very much as an afterthought.

Despite the similarity in title, the subject of Cooke and Bez's book is not numerical analysis. Here the aim is to provide undergraduates and computer professionals with a framework within which to study the diverse areas of computer science which require a solid mathematical basis for their detailed study. The book begins with an introduction to the idea of a set and then makes use of this fundamental concept to introduce relations, functions, and so on. Although each topic is presented in a rigorous and mathematically respectable way, illustrations

stimulated to inquire further into these topics, however, may regret the absence of references.

Although the book contains chapters on all the topics normally covered in a chemistry degree course, there is one notable omission: algebraic and geometric methods lead to the differential and integral calculus of functions of one and several variables; and two final chapters deal with differential equations and the statistical treatment of experimental errors. There is also a section on vectors, including the notation of vector calculus, tucked away under partial differentiation.

The major omission is any mention of matrices, so that the student is given no foundation to understand the elements of bonding theory and electronic structure, or to explore the chemical applications of group theory. Apart from this omission, those who master the material given will have a sound mathematical basis for a degree course in chemistry.

One feature of the book, compared with its competitors, is the relative density of text, as distinct from equations. Dr Francis seeks to educate by words as much as by symbols. Although some may appreciate this, others will find the absence of a coherent mathematical argument confusing, unless they have access to a companion text. For example, those familiar with the rules of calculus can adopt division by an increment dx as a useful mnemonic rule, but beginners in partial differentiation may be confused when offered the rule without mathematical explanation. The answers are correct, because Dr Francis knows

M. S. Child

M. S. Child is lecturer in theoretical chemistry at the University of Oxford.

are included to relate the material to aspects of computer science. For example, the chapter on graphics contains a discussion on data structures for graph representation and algorithms for graph traversal.

At times the attempt to produce a unified approach tends to cloud the issue. If we consider the chapter on graphs again, some of the essentially simple concepts described there are complicated by the use of terminology and notation which serve to embody the subject within the framework built up in previous chapters. The book concludes by using the mathematical tools introduced in earlier chapters to analyse three important topics in computer science - languages and grammar, finite automata, and computer geometry. A number of exercises are provided.

Chris Phillips

Chris Phillips is lecturer in computing science at the University of Newcastle upon Tyne.

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BOOKS

MATHEMATICS
AND PHYSICSMastering
recursive
proceduresRecursion via Pascal
by J.S. Rahl
Cambridge University Press,
£17.50 and £7.50
ISBN 0 521 26329 8 and 269 34 2

In practice, the term recursion refers to the technique of formulating an algorithm "partly in terms of itself": in theory, the technique is that of specifying an algorithm as a solution of a system of equations. Recursion is exemplified in mathematical constructions over many centuries, but it was first formulated as a general mechanism in Peano's *Arithmetica* and was *sollen die Zahlen?* in 1888, when the primitive recursive functions were defined. A mathematical theory of recursive definitions was created in research in mathematical logic in the 1920s and 1930s, by David Hilbert, G. Sudán, W. Ackermann, Kurt Gödel, Alonzo Church, S. C. Kleene, and Rosa Peter; the theoretical importance of recursion for computation was thus clearly established.

The technique of recursion was introduced into programming languages in the 1950s, in Newell's LISP and McCarthy's LISP, both of which were designed as list processing languages for non-numerical computation. Recursion then found its way into the numerical language Algol-60, and subsequently it has slowly established itself as an important construct in both functional and procedural languages, materially helped by the publication of D. W. Barron's admirable *Recursive Techniques in Programming* in 1968. J. S. Rahl's *Recursion via Pascal* is intended as a modernization and expansion of Barron's monograph, and also as a textbook for first-year and second-year undergraduates with a working knowledge of Pascal. The book is organized by treating types of recursion of increasing complexity, each type being studied solely by means of specific algorithms.

The book opens with a discussion of

linear recursion (where one recursive call is made in a procedure); attention is paid to algorithm efficiency, and there are comparisons between recursive and non-recursive procedures for the same tasks. Chapter two considers linear recursion on linked linear lists and includes an account of representing sets. There follow chapters on binary recursion (where two recursive calls are made in a procedure); chapter three treats recursion on binary trees, including search trees, trees for syntactic expressions and decision trees; and chapter four first examines the Towers of Hanoi puzzle and then concentrates on sorting.

Chapter five contains examples of double recursion (where two recursive procedures are used) and mutual recursion (where procedures call one another in sequence); and also examples of the recursive call of non-recursive procedures. Chapters six and seven are about N-ary recursion, arising from N-ary trees and directed graphs, and combinatorial applications. Finally, chapter eight considers three techniques for recursion elimination applied to a general scheme for linear recursion.

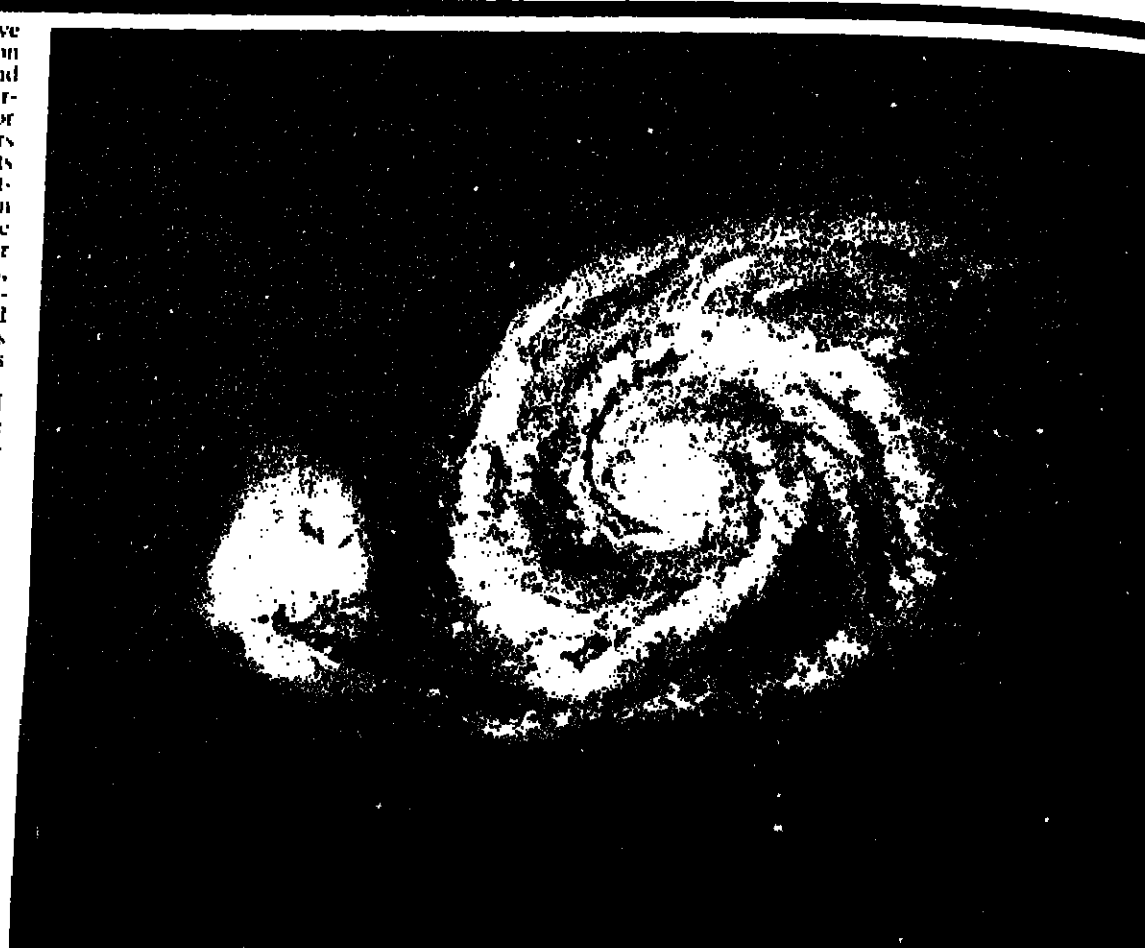
Although there is little material that is new, or not easily accessible in the literature, the topics have been assembled into a pleasing and useful elementary textbook on recursion. The didactic style and practical orientation of the book should encourage and enable students to master recursion and so deepen their experience of procedural programming.

However, the book does little to strengthen theoretical understanding. The concentration on examples and neglect of principles is, I think, a weakness of the book. The addition of notes on formal characterizations of the different types of recursion; on the idea of recursion as equation solving; on principles of measuring algorithm efficiency; on the history of recursion in language development, would have enhanced the value of the book to students, if only by creating a more scientifically mature atmosphere. I think a more formal and analytical approach is necessary nowadays, right from the beginning of a university education in computer science.

The book can be recommended for reading in connexion with most courses on programming, data structures, and the design and analysis of algorithms. As Rahl justly observes, recursion is the Cinderella of procedural programming techniques; his book should help this important technique acquire popular appeal.

J.V. Tucker

J.V. Tucker is lecturer in computer studies at the University of Leeds.



The conspicuous spiral galaxy M51 (=NGC 5194) and its companion NGC 5195 passed close to each other during the last several hundred million years. Effects of the encounter may be seen in the elongated shape of the disk of M51 and the sprung pitch angle of its spiral arms. From Timothy Ferris's *Galaxies* (Columbus/Stewart, Tabori & Chang, £7.95).

Primitive
recursionSubrecursion: functions and
hierarchies
by H. E. Rose
Clarendon Press: Oxford University
Press, £22.50
ISBN 0 19 853189 3

How can computable functions whose arguments and values are non-negative integers, be defined? First, we can explicitly define a function f by a formula which gives $f(n)$ in terms of already known functions; thus, the functions which can be explicitly defined using $+$ and $\times$ are just the polynomials. This, however, is not enough – for example, 2^n cannot be expressed as a polynomial. Second, we can use recurrence relations (a method well known since the time of Euler); that is, $f(n)$ is given by a formula involving other "previous" values of f (for example, $2n = 2 \times 2^{n-1}$). Although "previous" does not necessarily mean "less than n ", it is most easily calculated by first calculating $n \times 100$. But if "previous" does mean "less than n ", then f is said to be defined by primitive recursion. The class PR of primitive recursive functions consists of all those functions which can be got by explicit definition and primitive recursion starting with the successor function (n

+ 1). PR is both the starting point and the pivot of Dr Rose's book.

Another way of defining PR is as follows. Let $f_1(n) = n + 2$; let $f_2(n)$ be got by starting from 0 and making n successive applications of (that is, iterating) f_1 – so $f_2(n) = 2n$; let $f_3(n)$ be got by starting from 1 and iterating f_2 n times – so $f_3(n) = 2^n$. Continuing in this way we get an infinite sequence f_1, f_2 , and so forth, of ever more rapidly increasing functions; and these form a backbone that can be fleshed out to the whole of PR by adding one or two auxiliary functions and then using explicit definitions.

Although in principle each of the functions f_i is computable, in practice this is not so: the lifetime of the universe is only an insignificant fraction of the run-time required to compute $f_3(5)$. One very interesting chapter in this way we get an infinite sequence f_1, f_2 , and so forth, of ever more rapidly increasing functions; and these form a backbone that can be fleshed out to the whole of PR by adding one or two auxiliary functions and then using explicit definitions.

Most of the book, however, is about ways of extending the backbone and the class PR. Let $f_4(n) = f_3(n) + 1$; a genuine extension to the backbone, is got by "diagonalizing" over the backbone; and this too (in principle) is computable. Rose considers repeating these processes of iteration and diagonalization into the transfinite, arriving at a rather natural extension E^* of PR. He also describes five alternative methods of constructing E^* , shows how E^* is related to standard (first-

order) number theory and develops a free-variable arithmetic based on E^* . Part of the interest of this work is purely taxonomic: the functions of PR and E^* are classified hierarchically. More significantly, however, this allows us to classify theorems according to the strength of the systems of axioms needed to prove them. The last chapter discusses a theorem of the Paris-Harrington type: a mathematically interesting sentence is given which is intuitively true but which cannot be proved in standard number theory.

The book is clearly and meticulously written; it contains much that has previously only been available in scattered (and sometimes sketchy) papers; and it will be valuable as a reference book. It also contains a thorough bibliography. Diligent readers, however, will find the details of definitions and proofs heavy going. This is perhaps, unavoidable: the mechanism of iterations, diagonalizations and well-orderings needs careful handling if it is to work smoothly. However, recent work by J.-L. Girard and his collaborators (not mentioned by Rose) has gone some way towards constructing an abstract theory of well-ordered hierarchies; so eventually it should prove possible to present the material of this book with the fine detail safely tucked away out of sight.

R. O. Gandy

R. O. Gandy is reader in mathematical logic at the University of Oxford.

Held
together
by gluonsHadron Interactions
by P. D. B. Collins and A. D. Martin
Adam Hilger, £9.95
ISBN 0 85274 768 3

Particle physics has been having something of a mixed press in recent years. On the one hand there have been the on-page stories about the succession of splendid experimental results which confirm the existence of new particles (the W and Z, the top quark, and so forth) and a whole rich fabric of phenomena predicted by the "standard model" of quarks and leptons and gauge fields. At the same time there have been mutterings of discontent with the level of funding, the scientific research which is consumed in the pursuit of yet more complex substructure of yet more varieties of

particle that owe their fleeting existence to the elaborate and expensive machinery we use to generate them. The continued participation by Britain in this line of research is itself under scrutiny by the ABRC-SERC review group chaired by Sir John Kendrew. An introductory postgraduate textbook on a branch of particle physics is not going to contribute directly to the debate. However, even if it is as clear and as comprehensive as this book, which illuminates the extraordinary range of data made intelligible by the standard model and its ramifications, it greatly strengthens the case made by those who liken the advances being made today in particle physics to the heroic epoch in the discoveries of Ernest Rutherford, Niels Bohr, Werner Heisenberg and Edwin Schrödinger, established firmly the basis of our understanding of the structure of the atom.

In 1929 Paul Dirac was able to write: "The underlying physical laws necessary for the mathematical theory of a large part of physics and the whole of chemistry are thus completely known, and what remains to be discovered is only the matter of the application of these principles to systems of matter and

electrons interacting through the electromagnetic field all of quantum chemistry could be derived (and much else besides). Some quantities – the size of a hydrogen molecule, let us say – are so straightforward to calculate that undergraduates might be asked to do it in an examination. Others – say, the structure of a complex protein – are such that no one would expect to start with the Schrödinger equation for the thousands of particles involved and grind through to an answer. Nevertheless, we believe with good reason that it would be possible in principle, and we have a vast corpus of phenomenological knowledge which makes the structure comprehensible in terms of hydrogen-bonding here, van der Waals attraction there, and so forth.

Where we stand now in particle physics is not dissimilar in that it is generally accepted that, at least for energies on the scale to say 1 TeV (10^{12} eV) or distances down to say one thousandth of the radius of a proton the "underlying physical laws" are known. The elementary constituents of matter at this scale are the so-called quarks and leptons, and the mechanism through which they interact is

continued on facing page

BOOKS

MATHEMATICS
AND PHYSICSValued
qualitiesDiamond
by Gordon Davies
Adam Hilger, £17.50
ISBN 0 85274 512 5

Diamond is a remarkable material, exciting both wonder and keen scientific interest. Though unknown to ancient Greece and Egypt, diamond was used during the Roman Empire for engraving seals. In the first century AD, Pliny the Elder correctly described in his *Natural History* transparent diamonds from India as large as hazel nuts and each having six corners. However, the test he reported for deciding whether or not a stone was a diamond – hitting it with a hammer – must have resulted over the centuries in countless good diamonds being needlessly smashed. It wasn't until 1669 that William Gilbert, physician to Queen Elizabeth I, disposed of the myth that the presence of diamonds would annul the magnetism of lodestone: other supposed magical powers still linger on.

Gordon Davies describes how the density of crystallized carbon exercises the minds of intellectual giants

such as Newton, Lavoisier and Davy, the anecdotes of the early attempts at making diamond giving life to the characters involved – especially J. B. Hannay and Henri Moissan. A chapter on the stability diagram for carbon paves the way for the subsequent section on modern synthesis and explains the very high temperatures and pressures necessary for diamond to grow in preference to graphite. Here, although Davies makes a brave attempt at explaining the notoriously difficult concept of entropy, non-scientific readers might have been greatly helped (as elsewhere in the book) by a brief explanation of the Kelvin temperature scale.

Exceptional physical properties make diamond the choice substance for a wide range of uses. The high thermal conductivity alone is exploited in the diamond "heat sinks" which conduct heat many times better than copper away from tiny electronic devices. The combination of high thermal conductivity with extreme hardness and a low coefficient of friction gives diamond the superiority over all other materials in drilling hard rocks, machining the toughest of steels and playing gramophone records without wearing them out.

Commercial production includes the synthesis of diamonds of particular shapes for specific jobs – for example, the needle-shaped crystals which are arranged radially around the rims of grinding wheels. Being chemically inert and transmitting a wide spectrum of wavelengths, diamond windows are ideal for lasers; and even the water-repelling nature of diamond is advantageous in surgical knives. Davies explains with interesting detail the underlying physics accounting for these and the other remarkable properties of diamond.

Practical
hologramsOptical Holography: principles,
techniques and applications
by P. Hariharan
Cambridge University Press, £35.00
ISBN 0 521 24348 3

Most books about holography take one of two different approaches – either as art-form or as applied science. Hariharan has chosen the second, but he does give a nod in the direction of art in the shape of a chapter on holograms for displays. Although the best-known thing about holography is that true three-dimensional images are formed, in fact the purpose of the original invention by Dennis Gabor in 1948 was quite different: he was attempting to overcome the intrinsic aberrations of electron microscopy by reproducing the images optically, thus cancelling the aberrations. Hariharan is good on the historical aspect of this topic – he points out that there were attempts to do something like this as early as 1820, but he does not point out that in the 1880s G. Lippman was using a method of colour photography that is the true precursor of colour volume holography. All that said, it was undoubtedly Gabor's work and the advent of the laser in the 1960s which set holography going.

continued from facing page

Analogous to the electromagnetic interaction between nuclei and electrons, it is through the gauge fields of quantum chromodynamics (QCD) and the electroweak unification. This is the standard model. The electromagnetic field in its particle-like manifestation has quanta called photons; and in a similar way there are quanta of the gauge fields of QCD and of the electroweak interaction: the gluons; and the W and Z particles, respectively.

Just as atoms and molecules are built up from nuclei and electrons held together by the electromagnetic interaction, so the protons and neutrons which comprise atomic nuclei are built up from quarks held together by their interactions with gluons. These subnuclear particles and others which share with them in the strong interaction of QCD are the hadrons, the subject of this book. And since hadrons also participate in the electroweak interactions, the book provides a rather comprehensive study of the empirical and theoretical basis for much of what is known about particle physics.

On the other hand, it is a study of

The technique depends on the distinction between amplitude and intensity in light waves (a similar distinction applies, of course, in all other kinds of waves); intensity is what is recorded by all ordinary detectors of light, for example, photographic film, the eye, and so on; and amplitude is the detail of the wave motion responsible for interference effects and the formation of images by lenses; we cannot record amplitude directly so we cannot make a "photograph" which contains all the detail of the object in three dimensions. To record amplitude we must make use of interference, and this is how it is done in holography: the hologram is a record not of the light from an object but of the interference between the light from the object and another beam of light, the so-called "reference beam". When the hologram is illuminated again with the reference beam, the three-dimensional image of the original object appears, reconstructed from the recorded interference pattern.

Hariharan's book is a compact study that is not overladen by theoretical details of the principles and applications of holography. The book proper occupies only 250 pages and the remaining 60 pages are used for five appendices on certain mathematical and theoretical topics, some 30 pages of references, and excellent name and subject indexes. Seven chapters are devoted to principles and practice, with much detail about recording media, and eight chapters to applications. On applications, the author has chosen to be exhaustive rather than

discriminating; thus, although there are illustrations of computer-generated holograms, it is not suggested that so far the only really useful application of these is for null-testing optical elements such as non-spherical lens surfaces, rather than for producing images. A similar criticism might be offered about the chapter on information storage; at present it is not apparent that any of the holographic systems are of practical use, despite the fact that work has been going on in this area for about 20 years.

The most successful technological application of holography has probably been in holographic interferometry – now established as an important technique of non-destructive testing – and Hariharan provides a very good, though rather compressed, treatment of it. Perhaps the other applications of most promise are holographic optical elements, including diffraction gratings, and computer-generated holograms for optical testing. However, although all receive adequate treatment, serious workers will have to follow up some of the references in order to get all the details.

I can recommend this book as a useful, clearly-written and up-to-date study of an interesting part of applied optical science.

W. T. Welford

Professor Welford recently retired as head of the optics section of the Blackett Laboratory at Imperial College, London.

John Charap

John Charap is professor of theoretical physics at Queen Mary College, London.

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The New South Wales Institute of Technology is a corporate institution of higher education established in 1955 whose objective is to provide a range of studies and research opportunities for those wishing to enter or advance in professional work. The governing body of the Institute is the Council which is comprised of members nominated by the Minister, member elected by staff and students and ex officio members. The President is the chief executive officer of the Institute.

The teaching and research work of the Institute is carried on in eight Faculties, namely: Architecture and Building, Business, Engineering, Humanities and Social Sciences, Law, Life Sciences, Mathematical and Computing Sciences and Science. In 1984 some 9000 students are engaged in studies leading to admission to Bachelor's and Master's degrees and the award of Graduate Diplomas.

The Council of the Institute now invites applications for appointment to the position of Vice-President. The Vice-President has a major role in creating policy for academic planning and the implementation of course work in the several faculties. In connection with this work the Vice-President will assume responsibility for educational facilities including the Library and the Computer Centre. Additionally the incumbent will work with the President in the general development and administration of the Institute and will deputise for the President in the latter's absence.

It is anticipated that applicants will possess high academic qualifications and can demonstrate experience in tertiary education administration at an appropriate level. A close appreciation of the educational needs of the industrial and commercial community would be expected.

CONDITIONS OF APPOINTMENT
 Salary and a contribution toward personal expenses are provided for overseas appointees. A Housing Loan Scheme is also available. With consent of Council, academic staff are permitted to undertake limited consulting work.

Applications should include full details of academic and professional background. The names and addresses of three referees, from whom confidential reports may be obtained, should be included. In reply please quote reference No. 84/109. Applications close 16th November, 1984.

Details of conditions of employment and further information regarding this position can be obtained from:

The Director,
N.S.W. Government Office,
68 Strand,
LONDON WC2N 6LZ

AUSTRALIA
ROYAL MELBOURNE INSTITUTE
OF TECHNOLOGY LIMITED
LECTURER
DEPARTMENT OF METALLURGY AND MINING

Applications are invited for a vacant position of Lecturer, initially for a three year term.

The duties include responsibility to the Head of Department for teaching in aspects of extractive metallurgy, particularly hydro and electro-metallurgy. A practical background with skills in instrumentation and process simulation and optimization, with computers and microprocessors is desirable.

Applicants should hold a higher degree or first degree in an appropriate discipline plus have had several years of professional experience in a related field or have achieved an equivalent status. Appropriate disciplines would include Metallurgical and Chemical Engineering.

Academic staff are encouraged to engage in externally funded applied research activities and to undertake an appropriate amount of consulting work. Detailed enquiries should be addressed to the Acting Head of Department, Mr. J. Hensler at the address below.

Salary within the range A\$24,353-A\$31,994 p.a.

Position descriptions may be obtained from Personnel Services Centre - (03) 563 5611 ext. 243. Applications quoting Ref. No. 124/12/AN to the Staff Office, RM17, 26-28 Victoria Street, Carlton 3053, Victoria, Australia by 13th December, 1984.


NATIONAL UNIVERSITY OF SINGAPORE
TEACHING APPOINTMENTS IN DIAGNOSTIC RADIOLOGY

Applications are invited for teaching appointments in the newly established Department of Diagnostic Radiology in the National University of Singapore.

Candidates should possess an approved basic medical degree and approved relevant higher professional/academic qualifications together with teaching and research experience. Appointments are likely to be made at Lecturer, Senior Lecturer or Associate Professor level depending on qualifications, seniority and experience.

The successful candidate is expected to have expertise in the various aspects of clinical diagnostic radiology, preferably also including ultrasonography and C.T. scanning. For senior appointments, familiarity with nuclear magnetic resonance will be an advantage.

Gross annual emoluments range as follows:
 Lecturer \$530,860 - \$53,750
 Senior Lecturer \$567,590 - \$101,830
 Associate Professor \$599,300 - \$123,000

(STGE1 = \$52.83 approximately)

The commanding salary is dependent upon the candidate's qualifications, experience, and the level of appointment offered. In addition, an appointee with an approved basic medical degree and approved relevant higher professional/academic qualifications will be given the option to retain consultation fees up to 60% of his gross annual emoluments or a fixed medical allowance, the rates of which per annum are as follows:

Lecturer \$58,000 - \$9,000
 Senior Lecturer \$61,000
 Associate Professor \$821,000

Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member and the University are each required to contribute at the present rate of 25% of the staff member's salary, the staff member's contribution being subject to a maximum of \$51,260 a month. The sum standing to the staff member's credit in the Fund is tax-free and may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Depending on the type of contract offered, other benefits may include: a settling-in allowance of \$51,000 (single) or \$52,000 (married), subsidised housing at nominal rentals ranging from \$5120 to \$5216 p.m., education allowance for up to three children, subject to a maximum of \$510,000 per annum per child, passage assistance and baggage allowance for the transportation of personal effects to Singapore.

Application forms and further information on terms and conditions of service may be obtained from:

The Director,
NUS Overseas Office,
c/o Singapore High Commission in
National University of
Singapore
Kart Ridge
Singapore 0611
NUS Overseas Office
c/o Singapore High Commission in
London
5 Chesham Street, London SW1
U.K.
Tel: (01) 235-4662 17113


NATIONAL UNIVERSITY OF SINGAPORE
DEPARTMENT OF SOCIOLOGY

Applications are invited for teaching appointments in the Department of Sociology from candidates who should possess a relevant PhD degree and who specialise in the following areas:

Urban Sociology
 Crime and Delinquency
 Social Psychology
 Sociological Theory

Preference will be given to candidates who have interests and research experience in South-east Asia.

Gross annual emoluments range as follows:
 Lecturer \$530,860-\$53,750
 Senior Lecturer \$567,590-\$101,830
 Associate Professor \$599,300-\$123,000

(STGE2 = \$52.83 approximately)

The commanding salary will depend on the candidate's qualifications, experience and level of appointment offered.

Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member and the University are each required to contribute at the present rate of 25% of his salary, the staff member's contribution being subject to a maximum of \$51,260 a month. The sum standing to the staff member's credit in the Fund is tax-free and may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Depending on the type of contract offered, other benefits may include: a settling-in allowance of \$51,000 (single) or \$52,000 (married), subsidised housing at nominal rentals ranging from \$5120 to \$5216 p.m., education allowance passage assistance and baggage allowance for the transportation of personal effects to Singapore. Staff members may undertake consultation work, subject to the approval of the University, and retain consultation fees up to a maximum of 60% of gross annual emoluments in any one year.

Application forms and further information on terms and conditions of service may be obtained from:

The Director,
NUS Overseas Office,
c/o Singapore High Commission in
National University of Singapore
Kart Ridge
Singapore 0611
NUS Overseas Office
c/o Singapore High Commission in
London
5 Chesham Street
London SW1
U.K.
Tel: (01) 235-4662 17088

UNIVERSITY OF TROMSØ
Associate/Full Professorship in English Literature

An Associate or a Full Professorship in English literature defined as literature in the English language. Applications are invited from scholars in the areas. Three sets of all relevant scholarly work should be submitted with the application. Further information may be obtained from: School of Languages and Literature, University of Tromsø, P.O. Box 1090, N-9001 Tromsø, Norway.

Final application date: 28.11.1984. Final date for the submission of scholarly work: 28.2.1985.

UNIVERSITI SAINS MALAYSIA
1. SCHOOL OF MEDICAL SCIENCES
 Applications are invited for the post of PROFESSOR/ASSOCIATE PROFESSOR/LECTURER in any of the following fields:-

ANATOMY, PHYSIOLOGY, CHEMICAL PATHOLOGY, MICROBIOLOGY, PHARMACOLOGY, SURGERY, MEDICINE, OBSTETRICS AND GYNAECOLOGY, PAEDIATRICS, ANAESTHESIOLOGY, ENT, RADIOLOGY, IMMUNOLOGY AND ORTHOPAEDIC

A. QUALIFICATIONS/EXPERIENCE: PROFESSOR should have MBBS/Ph.D. degree with wide experience in University teaching and research. ASSOCIATE PROFESSOR should have MBBS/Ph.D. degree with several years experience teaching at University level. LECTURER should have MBBS/Ph.D. degree with interest in teaching and research. (Clinical staff will be required to undertake patient care duties in Teaching Hospital and those with specialist qualifications will be eligible for Clinical Allowance).

2. SCHOOL OF ENGINEERING SCIENCES AND INDUSTRIAL TECHNOLOGY
 Applications are invited for the following posts in the above mentioned School:-

(1) PROFESSOR in Electronic Engineering
 (2) PROFESSOR in Rubber Technology
 (3) PROFESSOR in Materials Engineering

A. QUALIFICATIONS/EXPERIENCE: (1) For the post of Professor in Electronic Engineering, applicants should be qualified in the field of Electronic Engineering with expertise in Control and Instrumentation or Computer Communication. (2) Candidates for the post of Professor in Rubber Technology should have experience in Polymer Science and Technology with expertise in rubber technology. Specialisation in one or more of the following areas would be preferred: Performance and Use of Rubber in Engineering; Polymer Rheology and Processing; Mould Design and Product Manufacture. (3) For the post of Professor in Materials Engineering, candidates should have expertise in Ceramics or Metallurgy.

3. OTHER INFORMATION

A. SALARY RANGE PER ANNUM: PROFESSOR - from M\$41,260 to M\$46,920. ASSOCIATE PROFESSOR - from M\$35,040 to M\$38,720. LECTURER - from M\$17,040 to M\$33,240.

B. OTHER ALLOWANCES PER ANNUM: (1) Housing: +M\$3,200 to +M\$12,000; (2) Entertainment: +M\$6,600 to +M\$12,000. For Lecturers, only those drawing a salary of M\$31,800 p.a. and above will be paid the two allowances.

C. OTHER BENEFITS: Return passage, excess baggage assistance, paid annual leave, free medical benefits for staff and family, gratuity and car loan facilities.

D. TENURE: Contract for 3 years and renewable. Send curriculum vitae, references (3) and copies of degree certificates and present salary to Registrar, Universiti Sains Malaysia, Minden, Penang, Malaysia. 17112

Chisholm Institute of Technology
MELBOURNE, AUSTRALIA
Associate Director
(Planning and Resources)
(Ref: 84/87)

The Institute is seeking to appoint a suitably qualified person to the position of Associate Director (Planning and Resources). The appointee will have responsibility for the planning and management of the Institute's human and other resources, encompassing finance, staffing, management information and the Development Office.

Applicants may come from diverse backgrounds, but it is expected that the appointee will offer:

- an appropriate academic record
- sound understanding of the aims and operations of a tertiary education institution
- evidence of a capacity to provide leadership
- proven experience in policy development and dealing with government, succeeding and funding authorities and other regulatory bodies.

The appointment will be made on either a fixed-term or tenured basis, to be determined at the time of offer of appointment.

Salary: A\$63,419 p.a.

Other benefits, including superannuation, are available.

Intending applicants should first contact the Staff Officer, telephone (03) 573 2183 from whom copies of the position specification and details of the terms and conditions attaching to the appointment are available.

Written applications, quoting the reference number, and including personal and career details and the names and addresses of three referees, should be addressed to the Staff Officer.

Applications close on 7 December and it is expected that referees will be contacted in January 1985 and an offer of appointment made mid-February 1985.

The Institute reserves the right to make no appointment or to appoint by invitation.

Caulfield Campus,
 900 Dandenong Road, Caulfield East, 3145,
 Victoria, Australia. Phone (03) 573 2222.

NEW SCHOOL FOR SOCIAL RESEARCH

The Graduate Faculty's Department of Political Science is searching for an assistant professor who works in the field of international political economy. Candidates with area specialities are encouraged to apply, but the search is not limited to any particular definition of the field. At this stage, candidates should submit a curriculum vitae and a one page statement summarizing current research to: Professor A. Pollis, Department of Political Science, The Graduate Faculty, New School for Social Research, 66 West 12th Street, New York, N.Y. 10024.

Overseas continued
UNIVERSITY OF NATAL
FINE ARTS AND HISTORY OF ARTS
PIETERMARITZBURG

Applications are invited from suitably qualified persons regardless of sex, colour, race, culture or national origin to appointment to the post of

PROFESSOR

Applicants for the post should be well qualified, able to supervise postgraduate students and give academic leadership to the department. A high degree of competence in one or more of the principal areas of the Fine Arts and History of Art would be a recommendation. Applicants are requested to indicate whether they would be considered for the post of Professor or Associate Professor. The post of Professor is a full-time position and the post of Associate Professor is a part-time position. The salary will be in the range: R51 000 - R53 000.

The commanding salary will be dependent on the qualifications and/or experience of the successful applicant. In addition, an annual service bonus of 5% of one month's salary is payable.

Applicants should submit a curriculum vitae, with references, to the post of Professor or Associate Professor. The post of Professor is a full-time position and the post of Associate Professor is a part-time position. The salary will be in the range: R51 000 - R53 000.

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The Times Higher Education Supplement

Special Book Numbers and Features for 1985
BOOK NUMBERS

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